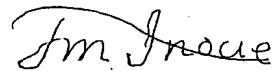


D E C L A R A T I O N

I, Toshiharu INOUE of Yokohama, Japan, the translator of the Japanese Patent Application No. 2000-260143, do hereby certify to the best of my knowledge and belief that the herewith enclosed is a true translation into English of the corresponding copy of the document which has been filed with the Japanese Patent Office on the 30th of August 2000, with respect to an application of Letters Patent.

Signed, this 1st day of November 2005



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[Title of the Invention]

REMOTE CONTROL SYSTEM, METHOD AND STORAGE
MEDIUM FOR IMAGE FORMING APPARATUS

[Number of claims] 49

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[Title of the Invention]

REMOTE CONTROL SYSTEM, REMOTE CONTROL METHOD
AND CENTRAL CONTROL SYSTEM AND RECORDING MEDIUM
5 THEREFOR

[What is claimed is:]

[Claim 1]

In a remote control system comprising a central control system including a computer, and a plurality of apparatuses such as image forming 10 apparatuses, which are connected with said central control system through telecommunication networks, said central control system receiving information from said plurality of apparatuses by way of the telecommunication networks and remotely controlling said plurality of apparatuses based on said information,

15 said remote control system is characterized in that said plurality of apparatuses are divided into a predetermined number of plural groups, and said central control system further comprises information collection means, wherein when said information is received from any one of said plurality of apparatuses to be remotely controlled, said information collection means 20 collects, based on said information presently received, related information from other apparatuses included in a same group except the one of said plurality of apparatuses from which said information is originally transmitted.

25 [Claim 2]

The remote control system according to claim 1 characterized in that said central control system further comprises:

processing means for processing said information which is received from the one of said plurality of apparatuses and said related information which is collected by said information collection means; and

5 information transmission means for making a transmission connection with computer systems or terminal units provided in a plurality of service centers each of which controls apparatuses of said plurality of apparatuses included in a corresponding group of the plural groups, to transmit said information processed by said information processing means thereto.

10

[Claim 3]

The remote control system according to claim 1 or 2 characterized in that said central control system further comprises means for setting in advance a kind of said information, which said information collection means is allowed to collect.

15

[Claim 4]

The remote control system according to any one of claims 1 to 3, wherein said information received from the one of said plurality of apparatuses and said related information collected by said information collection means are pre-maintenance information.

20

[Claim 5]

The remote control system according to any one of claims 1 to 3, 25 wherein said information received from the one of said plurality of apparatuses and said related information collected by said information collection means are information about expendable supplies and material.

[Claim 6]

In a remote control system comprising a central control system including a computer, and a plurality of apparatuses such as image forming apparatuses, which are connected with said central control system through telecommunication networks, said central control system receiving information from said plurality of apparatuses by way of the telecommunication networks and remotely controlling said plurality of apparatuses based on said information,

10 said remote control system is characterized in that said plurality of apparatuses are divided into a predetermined number of plural groups, and the central control system further comprises:

15 information accumulation means for accumulating said information when said information is received from any one of said plurality of apparatuses to be remotely controlled; and

20 information retrieval means for retrieving, based on a kind of said information received from the one of said plurality of apparatuses, related information which is stored in the information accumulation means and which has been received from other apparatuses included in a same group except the one of said plurality of apparatuses, from which said information is originally transmitted.

[Claim 7]

The remote control system according to claim 6 characterized in
25 that said central control system further comprises:

information processing means for processing said information which is received from the one of said plurality of apparatuses and said

related information which is retrieved by said information retrieval means;
and

information transmission means for making a transmission
connection with computer systems or terminal units provided in a plurality
5 of service centers each of which controls apparatuses of said plurality of
image forming apparatuses included in a corresponding group of the plural
groups, to transmit said information processed by said information
processing means thereto.

10 [Claim 8]

The remote control system according to claim 6 or 7 characterized
in that said central control system further comprises:

means for setting in advance a kind of said information, which said
information retrieval means is allowed to retrieve.

15

[Claim 9]

The remote control system according to any one of claims 6 to 8,
wherein said information received from the one of said plurality of
apparatuses and said related information retrieved by said information
20 retrieving means are pre-maintenance information.

[Claim 10]

The remote control system according to any one of claims 6 to 8,
wherein said information collected from the one of said plurality of
25 apparatuses and said related information retrieved by said information
retrieval means are information about expendable supplies and material.

[Claim 11]

The remote control system according to any one of claims 1 to 10 characterized in that said central control system further comprises group setting means for setting the plural groups of said plurality of apparatuses.

5

[Claim 12]

The remote control system according to claim 11 characterized by further comprising a plurality of communication adapters which communicates with said central control system and which are connected with said plurality of apparatuses, wherein said group setting means divides said plurality of image forming apparatuses into the plural groups by said communication adapters.

[Claim 13]

The remote control system according to claim 11 characterized by further comprising a plurality of communication adapters which communicates with said central control system and which are connected with said plurality of apparatuses, wherein said group setting means divides said plurality of image forming apparatuses into the plural groups such that each group includes a predetermined number of said communication adapters.

[Claim 14]

The remote control system according to claim 11, further comprising a network control apparatus, which connects said plurality of apparatuses with networks and which connects the networks with said communication networks, wherein said group setting means divides said

plurality of apparatuses into the plural groups by IP addresses of the networks.

[Claim 15]

5 The remote control system according to claim 11, further comprising a network control apparatus, which connects said plurality of apparatuses with networks and which connects the networks with said communication networks, wherein said group setting means divides said plurality of apparatuses into the plural groups such that each of the plural
10 groups includes a predetermined number of IP addresses of the networks.

[Claim 16]

15 The remote control system according to claim 2 or 7 characterized in that said central control system further comprises means for performing alteration and addition onto said information processed by said information processing means.

[Claim 17]

20 The remote control system according to claim 2 or 7 characterized in that said central control system further comprises means for setting a destination to which said information is transmitted by said information transmission means.

[Claim 18]

25 The remote control system according to claim 2 or 7 characterized in that said central control system further comprises means for outputting said information processed by said information processing means by means

of at least one of a displayed image, an image on a paper sheet and a voice.

[Claim 19]

The remote control system according to claim 2 or 7 characterized
5 in that said central control system further comprises means for transmitting
said information processed by said information processing means to any
one of the computer systems or terminal units, when the one of the
computer systems or terminal units request for acquiring said processed
information.

10

[Claim 20]

In a remote control system comprising a central control system
including a computer, and a plurality of apparatuses, which are connected
with said central control system through telecommunication networks, said
15 central control system receiving information from said plurality of
apparatuses by way of the telecommunication networks and remotely
controlling said plurality of apparatuses based on said information,

said remote control system is characterized in that said plurality of
apparatuses are divided into a predetermined number of plural groups, and
20 said central control system comprises:

information collection means, wherein when said information is
received from any one of said plurality of apparatuses to be remotely
controlled, said information collection means collects, based on a kind of
said information presently received, related information from other
25 apparatuses included in a same group except the one of said plurality of
apparatuses, from which said information is originally transmitted;

first information processing means for processing said information

received from the one of said plurality of apparatuses and said related information which is collected by said information collection means;

first information transmission means for making a transmission connection with computer systems or terminal units provided in a plurality of service centers each of which controls apparatuses of said plurality of apparatuses included in a corresponding group of the plural groups, to transmit said first information processed by said information processing means thereto;

information accumulation means for accumulating said information, when said information is received from the one of said plurality of apparatuses to be remotely controlled;

information retrieval means for retrieving, based on a kind of said information received from the one of said plurality of apparatuses, related information which is stored in the information accumulating means and which has been received from other apparatuses included in the same group except the one of said plurality of apparatuses, from which said information is originally transmitted;

second information processing means for processing said information which is received from any one of said plurality of apparatuses and said related information which is retrieved by said information retrieval means;

second information transmission means for making a transmission connection with the computer systems or terminal units provided in said plurality of service centers each of which controls apparatuses of said plurality of apparatuses included in the corresponding group of the plural groups, and transmit said information processed by said second information processing means; and

means for permitting either processing operations of said information collection means, said first information processing means, and said first information transmission means, and processing operations of said information retrieval means, said second information processing means, and said second information transmission means, or prohibiting both of the processing operations.

[Claim 21]

In a method for controlling a plurality of apparatuses such as
10 image forming apparatuses, which are connected with a central control system through telecommunication networks, by receiving information from said plurality of apparatuses by way of the respective telecommunication networks, and remotely controlling said plurality of apparatuses based on said information,

15 said method is characterized by comprising the steps of:
upon receiving said information such as pre-maintenance information and information about expendable supplies and material, collecting, by said central control system, information related to said received information from other apparatuses included in one of plural groups including an apparatus, from which said information is originally transmitted, wherein said plurality of apparatuses are divided into the plural groups;

processing the received information and the collected information;
making a transmission connection with respective computer systems or terminal units provided in a plurality of service centers each of which controls apparatuses of said plurality of apparatuses included in a corresponding group of the plural groups; and

transmitting said processed information thereto.

[Claim 22]

In a method for controlling a plurality of apparatuses such as
5 image forming apparatuses, which are connected with a central control
system through telecommunication networks, by receiving information
from said plurality of apparatuses by way of the respective
telecommunication networks, and controlling remotely said plurality of
apparatuses based on said information,

10 said method is characterized by comprising the steps of:
 accumulating said information in a memory unit, when said
information, which relates to pre-maintenance and to expendable supplies
and material, is received from any one of said plurality of apparatuses,
wherein said plurality of apparatuses are divided into plural groups;

15 retrieving related information stored in said memory unit, based on
a kind of said information presently received, said related information
having been received from other apparatuses included in a same group
except the one of said plurality of apparatuses, from which said
information is originally transmitted;

20 processing the received information and the retrieved information;
 making a transmission connection with respective computer
systems or terminal units provided in a plurality of service centers each of
which controls apparatuses of said plurality of apparatuses included in a
corresponding group of the plural groups; and

25 transmitting said processed information processed thereto.

[Claim 23]

The method according to claim 21 or 22 characterized by further comprising the step of:

performing alteration and addition onto said processed information with said central control system.

5

[Claim 24]

The method according to any one of claims 21 to 23 characterized by further comprising the step of:

10 outputting said processed information by means of at least one of a displayed image, an image on a paper sheet and a voice with said central control system.

[Claim 25]

15 The method according to any one of claims 21 to 24 characterized by further comprising the step of:

transmitting said processed information to the computer systems or terminal units with said central control system, when any one of the computer systems or the terminal units request for acquiring said processed information.

20

[Claim 26]

In a central control system which is connected with a plurality of apparatuses such as image forming apparatuses through telecommunication networks, wherein said central control system receives information from 25 said plurality of apparatuses by way of the telecommunication networks and remotely controls said plurality of apparatuses, based on said information,

said central control system is characterized by comprising information collection means, wherein said information, which relates to information such as pre-maintenance information and information about expendable supplies and material, is received from any one of said 5 plurality of apparatuses to be remotely controlled, which apparatuses are divided into a predetermined number of plural groups, said information collection means collects, based on a kind of said information presently received, related information from other apparatuses included in a same group except the one of said plurality of apparatuses, from which said 10 information is originally transmitted.

[Claim 27]

The central control system according to claim 26 characterized by further comprising:

15 information processing means for processing said information which is received from the one of said plurality of apparatuses and said related information which is collected by said information collection means; and

20 information transmission means for making a transmission connection with computer systems or terminal units provided in a plurality of service centers each of which controls apparatuses of said plurality of image forming apparatuses included in a corresponding group of the plural groups, to transmit said information processed by said information processing means thereto.

25

[Claim 28]

The central control system according to claim 26 or 27

characterized by further comprising:

means for setting in advance a kind of said information, which said information collection means is allowed to collect.

5 [Claim 29]

In a central control system which is connected with a plurality of apparatuses such as image forming apparatuses through telecommunication networks, wherein said central control system receives information from said plurality of apparatuses by way of the telecommunication networks
10 and remotely controls said plurality of apparatuses, based on said information,

said central control system is characterized by comprising:

information accumulation means for accumulating said information, which relates to information such as pre-maintenance information and
15 information about expendable supplies and material, when said information is received from any one of said plurality of apparatuses to be remotely controlled, which are divided into a predetermined number of plural groups; and

information retrieval means for retrieving, based on a kind of said information received from the one of said plurality of apparatuses, related information which is stored in the information accumulating means and which has been received from other apparatuses included in a same group except the one of said plurality of apparatuses, from which said information is originally transmitted.

25

[Claim 30]

The central control system according to claim 29 characterized by

further comprising:

information processing means for processing said information which is received from said plurality of apparatuses and said related information which is retrieved by said information retrieval means; and

5 information transmission means for making a transmission connection with computer systems or terminal units provided in a plurality of service centers each of which controls apparatuses of said plurality of image forming apparatuses included in a corresponding group of the plural groups, to transmit said information processed by said information processing means thereto.

10

[Claim 31]

The central control system according to claim 29 or 30 characterized by further comprising:

15 means for setting in advance a kind of said information, which said information retrieval means is allowed to retrieve.

[Claim 32]

20 The central control system according to any one of claims 26 to 31, characterized by further comprising:

group setting means for setting the plural groups of said plurality of apparatuses.

[Claim 33]

25 The central control system according to any one of claims 27 to 30 characterized by further comprising:

means for performing alteration and addition onto said information

processed by said information processing means.

[Claim 34]

5 The central control system according to any one of claims 27 to 30
characterized by further comprising:

means for setting a destination to which said information is
transmitted by said information transmission means.

[Claim 35]

10 The central control system according to any one of claims 27 to 30
characterized by further comprising:

means for outputting said information processed by said
information processing means by means of at least one of a displayed
image, an image on a paper sheet and a voice.

15

[Claim 36]

The central control system according to any one of claims 27 to 30
characterized by further comprising:

20 means for transmitting said information processed by said
information processing means to any one of computer systems or terminal
units, when the one of the computer systems or terminal units request for
acquiring said processed information.

[Claim 37]

25 In a central control system which is connected with a plurality of
apparatuses such as image forming apparatuses through telecommunication
networks, wherein said central control system receives information from

said plurality of apparatuses by way of the telecommunication networks and remotely controls said plurality of apparatuses, based on said information,

said central control system is characterized by comprising:

5 information collection means, wherein when said information, which relates to information such as pre-maintenance information and information about expendable supplies and material, is received from any one of said plurality of apparatuses to be remotely controlled, which are divided into a predetermined number of plural groups, said information collection means collects, based on a kind of said information presently received, information related to the received information from other apparatuses included in a same group except the one of said plurality of apparatuses, from which said information is originally transmitted;

10

15 first information processing means for processing said information received from the one of said plurality of apparatuses and said related information which is collected by said information collection means;

20 first information transmission means for making a transmission connection with computer systems or terminal units provided in a plurality of service centers each of which controls apparatuses of said plurality of image forming apparatuses included in a corresponding group of the plural groups, to transmit said information processed by said information processing means thereto;

25 information accumulation means for accumulating said information when said information is received from the one of said plurality of apparatuses to be remotely controlled;

 information retrieval means for retrieving, based on a kind of said information received from the one of said plurality of apparatuses, related

information which is stored in the information accumulating means and which has been received from other apparatuses included in the same group except the one of said plurality of apparatuses, from which said information is originally transmitted;

5 second information processing means for processing said information which is received from any one of said plurality of apparatuses and said related information which is retrieved by said information retrieval means;

10 second information transmission means for making a transmission connection with the computer systems or the terminal units provided in the plurality of service centers each of which controls the apparatus of said plurality of image forming apparatuses in the corresponding group of the plural groups, to transmit said information processed by said information processing means; and

15 means for permitting either processing operations of said information collection means, said first information processing means, and said first information transmission means, or processing operations of said information retrieval means, said second information processing means, and said second information transmission means, or prohibiting both of the
20 processing operations.

[Claim 38]

A computer readable medium storing computer program for carrying out a method in a computer of a central control system, said computer receiving information from a plurality of apparatuses such as image forming apparatuses, which are connected with the computer through telecommunication networks, and remotely controlling said plurality of

apparatuses based on said information,
said method comprising the steps of:
upon receiving said information such as pre-maintenance
information and information about expendable supplies and material,
5 performing an information collection function to collect information
related to said information from other apparatuses included in a same
group except the apparatus, from which said information is originally
transmitted.

10 [Claim 39]

The computer readable medium according to claim 38
characterized in that the method further comprises:

15 performing a processing function to process said received
information and the information collected by said information collection
function; and

20 performing an information transmitting function to transmit said
processed information after transmissively connecting to respective
computer systems or terminal units provided in a plurality of service
centers each of which controls apparatuses of said plurality of image
forming apparatuses included in a corresponding group of the plural groups.

[Claim 40]

The computer readable medium according to claim 38 or 39
characterized in that the method comprises:

25 performing a function to set in advance a kind of said information,
which said information collection function is allowed to collect.

[Claim 41]

A computer readable medium storing computer program for carrying out a method in a computer of a central control system, said computer receiving information from a plurality of apparatuses such as 5 image forming apparatuses, which are connected with the computer through telecommunication networks, and remotely controlling said plurality of apparatuses based on said information,

said method comprising the steps of:

10 performing an information accumulation function to accumulate said information, when said information, which relates to pre-maintenance and expendable supplies and material, is received from any one of said plurality of apparatuses to be remotely controlled; and

15 performing an information retrieval function to retrieve, based on a kind of said information presently received, related information from other apparatuses included in a same group except the one of said plurality of apparatuses, from which said information is originally transmitted.

[Claim 42]

The computer readable medium according to claim 41
20 characterized in that the method further comprises the steps of:

performing a processing function to process said information which is received from the one of said plurality of apparatuses and said related information retrieved by the information retrieval function; and

25 performing an information transmission function to transmit said processed information after transmissively connecting to respective computer systems or terminal units provided in a plurality of service centers each of which controls apparatuses of said plurality of image

forming apparatuses included in a corresponding group of the plural groups.

[Claim 43]

5 The computer readable medium according to claim 41 or 42
characterized in that the method further comprises the steps of:

performing a function to set in advance a kind of said information,
which said information retrieval function is allowed to retrieve.

[Claim 44]

10 The computer readable medium according to any one of claims 38
to 43, characterized in that the method further comprises the steps of:
performing a group setting function to set the groups of said
plurality of image forming apparatuses.

15 [Claim 45]

The computer readable medium according to claim 39 or 42,
characterized in that the method further comprises the steps of:
performing a function to perform alteration and addition onto said
information processed by said information processing function.

20

[Claim 46]

The computer readable medium according to claim 39 or 42
characterized in that the method further comprises the steps of:
performing a function to set a destination to which said
information is transmitted by said information transmission function.

[Claim 47]

The computer readable medium according to claim 39 or 42 characterized in that the method further comprises the steps of:

performing a function to output said information processed by said information processing function by means of at least one of a displayed image, an image on a paper sheet and a voice.

5 [Claim 48]

The computer readable medium according to claim 39 or 42 characterized in that the method further comprises the steps of:

10 performing a function to transmit said information processed by said information processing function, when any one of computer systems or terminal units request for acquiring said processed information.

[Claim 49]

15 A computer readable medium storing computer program for carrying out a method in a computer of a central control system, said computer receiving information from a plurality of apparatuses such as image forming apparatuses, which are connected with the computer through telecommunication networks, and remotely controlling said plurality of 20 apparatuses based on said information,

said method comprising the steps of:

upon receiving said information such as pre-maintenance information and information about expendable supplies and material, performing an information collection function to collect information 25 related to said information from other apparatuses included in a same group except an apparatus, from which said information is originally transmitted;

performing a first processing function to process said received information and the information collected by the information collection function;

5 performing a first information transmission function to transmit said processed information processed by the first information processing function after transmissively connecting to respective computer systems or terminal units provided in a plurality of service centers each of which controls apparatuses of said plurality of apparatuses included in a corresponding group of the plural groups;

10 performing an information accumulation function to accumulate information, when said information, which relates to pre-maintenance and expendable supplies and material, is received from any one of said plurality of apparatuses to be remotely controlled;

15 performing an information retrieval function to retrieve, based on a kind of said information presently received, related information from other apparatuses included in the same group except the one of the plurality of apparatuses, from which said information is originally transmitted;

20 performing a second processing function to process said received information and the related information retrieved by said information retrieval function;

25 performing a second information transmission function to transmit said processed information processed by the second processing function after transmissively connecting to the respective computer systems or terminal units provided in the plurality of service centers each of which controls the apparatuses of said plurality of image forming apparatuses included in the corresponding group of the plural groups; and

performing a function to permit either the processing operations of

5 said information collection function, said first information processing function, and said first information transmission function, or the processing operations of said information retrieval function, said second information processing function, and said second information transmission function, or to prohibit both of the processing operations.

[Detailed Description of the Invention]

[0001]

[Technical field of the Invention]

10 This invention relates to a system and a method for implementing remote control of image forming apparatuses, which are connected to a central control system, based on information transferred by way of telecommunication network, the central control system (incorporating a computer) in use for the control, and a computer readable medium for recording a program of instructions to perform method steps for 15 implementing the control.

[0002]

[Background Art]

20 A remote control method has been known, for example, for image forming apparatuses placed in offices of many and unspecified users (customers), in which a central control system (center system) located at a service center is transmissively connected to these apparatuses of various customers by way of telecommunication network (such as the public switched telephone network) to transmit information and to perform the 25 control based on the information.

[0003]

In previous control systems, a central control system is connected to

a plurality of image forming apparatus via telecommunication network, a variety pieces of information are relayed through the network, and the control is performed by the central control system based on the information.

When a fault (or anomaly) takes place to an apparatus on the
5 customer side, the fault is reported to the central control system regarding the kind of fault, name and model of the apparatus, and time of fault occurrence, among others. In addition, the fault report is then displayed on a display screen of computer terminal (client computer).

[0004]

10 On the display of the fault report, an operator at the terminal finds the details of the apparatus and customer such as the location of installation, time of fault occurrence (year, month, day, hour and minute), nature of the fault, method of fault recovery and so on.

15 The operator then determines from the content of report whether a service engineer is to be dispatched, to subsequently make several arrangements such as, for example, issuing a request to the client depot (service center), if necessary, for dispatching a service engineer (or sales engineer) in charge from the depot.

[0005]

20 In addition, when a due date is approached regarding to the pre-maintenance or to expendable supplies and material, this is automatically reported, and the central control system instructs to display the report on the display screen of the terminal computer.

[0006]

25 When the report (or information) is displayed on the pre-maintenance, or on the expendable supplies and material, a center operator finds from the content of the display the details of the customer, from

which the information is sent, regarding to the time (year, month, day, hour and minute) of the arrival of the pre-maintenance, or supplementing the expendable supplies such as paper sheets, toner and others.

The operator then determines whether a service engineer is to be
5 dispatched, and subsequently makes several arrangements such as, for example, issuing a request to the client depot, if necessary, for dispatching from the depot an engineer in charge and for the delivery of the supplies.

[0007]

10 [Problems to be solved by the Invention]

However, since the arrangement by the side of the center operator is thus made each time when the information is received, this may result in inconveniences caused by overlap of the information.

For example, a service engineer is already dispatched to a first
15 customer to deal with a report previously received. When another information is then received by the center operator regarding to the request of service dispatch to a second customer who is closely located (this may be at the same floor in the same building) to the first customer, the service engineer may not be able to respond to the second customer simply because
20 the engineer is already working for the first customer.

Namely, even when an anomaly report is received at nearly the same time from nearly the same location (e.g., the same floor in the same building), this report may not be properly put into a service action, because of the above noted report overlap caused in the previous methods.

25 [0008]

In order to deal further with the second report, therefore, another service call becomes necessary from the scratch, to thereby result in

disadvantages such as inefficiency in the service activity as a whole, and undue increase in the cost for the activity.

[0009]

It is therefore desirable to provide a method capable of alleviating these disadvantages, thereby increasing the efficiency in the service activity and reducing undue cost for the activity.

[0010]

[Means for Solving the Problems]

In order to achieve the above-noted objects, the invention is devised to provide a system and a method for implementing remote control, a central control system (incorporating a computer) in use for the control, and a computer accessible storage medium for recording a program of instructions to perform method steps for implementing the control.

[0011]

The remote control system according to claim 1 of the present invention includes a central control system including a computer, and a plurality of apparatuses such as image forming apparatuses, which are connected with the central control system through telecommunication networks, wherein the central control system receives information from the plurality of apparatuses by way of the telecommunication networks and remotely controls the plurality of apparatuses based on the information.

The thus constructed remote control system is characterized by including the following means.

[0012]

Namely, information collection means is provided in the central control system, wherein when the information is received from any one of the plurality of apparatuses to be remotely controlled, the information

collection means collects, based on the information presently received, information related to the information from other apparatuses included in the same group except the one of the plurality of apparatuses from which the information is originally transmitted.

5 [0013]

The remote control system according to claim 2 of the present invention is as follows. In the system of claim 1, the central control system further includes:

10 processing means for processing the information which is received from the one of the plurality of apparatuses and the related information which is collected by the information collection means; and

15 information transmission means for making a transmission connection with computer systems or terminal units provided in a plurality of service centers each of which controls apparatuses of the plurality of apparatuses included in a corresponding group of the plural groups, to transmit the information processed by the information processing means thereto.

[0014]

20 The remote control system according to claim 3 of the present invention is as follows. In the system of claims 1 and 2, the central control system further includes means for setting in advance a kind of the information, which the information collection means is allowed to collect.

[0015]

25 The remote control system according to claim 4 of the present invention is as follows. In the system of any one of claim 1, 2 or 3, the information received from the one of the plurality of apparatuses and the related information collected by the information collection means are pre-

maintenance information.

[0016]

The remote control system according to claim 5 of the present invention is as follows. In the system of any one of claim 1, 2 or 3, the 5 information received from the one of the plurality of apparatuses and the related information collected by the information collection means are information about expendable supplies and material.

[0017]

The remote control system according to claim 6 of the present 10 invention includes a central control system including a computer, and a plurality of apparatuses such as image forming apparatuses, which are connected with the central control system via telecommunication networks. The central control system receives information from the plurality of apparatuses by way of the telecommunication networks and remotely 15 controls the plurality of apparatuses based on the information.

The thus constructed remote control system is characterized in that the central control system further includes following means.

[0018]

Namely, the central control system further includes:
20 information accumulation means for accumulating the information when the information is received from any one of the plurality of apparatuses to be remotely controlled, which are divided into a predetermined number of plural groups; and

information retrieval means for retrieving, based on a kind of the 25 information received from the one of the plurality of apparatuses, related information which is stored in the information accumulation means and which has been received from other apparatuses included in the same group

except the one of the plurality of apparatuses, from which the information is originally transmitted.

[0019]

The remote control system according to claim 7 of the present
5 invention is as follows. In the system of claim 6, the central control system further includes:

information processing means for processing the information which is received from the one of the plurality of apparatuses and the related information which is retrieved by the information retrieval means; and

10 information transmission means for making a transmission connection with computer systems or terminal units provided in a plurality of service centers each of which controls apparatuses of the plurality of image forming apparatuses included in a corresponding group of the plural groups, to transmit the information processed by the information processing means thereto.

15

[0020]

The remote control system according to claim 8 of the present invention is as follows. In the system of claim 6 or 7, the central control system further includes:

20 means for setting in advance a kind of the information, which the information retrieval means is allowed to retrieve.

[0021]

The remote control system according to claim 9 of the present invention is as follows. In the system of any one of claim 6, 7 or 8, the
25 information received from the one of the plurality of apparatuses and the related information retrieved by the information retrieving means are pre-maintenance information.

[0022]

The remote control system according to claim 10 of the present invention is as follows. In the system of any one of claim 6, 7 or 8, the information collected from the one of the plurality of apparatuses and the related information retrieved by the information retrieval means are information about expendable supplies and material.

[0023]

The remote control system according to claim 11 of the present invention is as follows. In the system of any one of claim 1 to 10, the central control system further includes group setting means for setting the plural groups of the plurality of apparatuses.

[0024]

The remote control system according to claim 12 of the present invention is as follows. In the system of claim 11, the remote control system further includes a plurality of communication adapters which communicates with the central control system and which are connected with the plurality of apparatuses, wherein the group setting means divides the plurality of image forming apparatuses into the plural groups by the communication adapters.

[0025]

The remote control system according to claim 13 of the present invention is as follows. In the system of claim 11, the remote control system further includes a plurality of communication adapters which communicates with the central control system and which are connected with the plurality of apparatuses, wherein the group setting means divides the plurality of image forming apparatuses into the plural groups such that each group includes a predetermined number of the communication

adapters.

[0026]

The remote control system according to claim 14 of the present invention is as follows. In the system of claim 11, the remote control system further includes a network control apparatus, which connects the plurality of apparatuses with networks and which connects the networks with the communication networks, wherein the group setting means divides the plurality of apparatuses into the plural groups by IP addresses of the networks.

10 [0027]

The remote control system according to claim 15 of the present invention is as follows. In the system of claim 11, the remote control system further includes a network control apparatus, which connects the plurality of apparatuses with networks and which connects the networks with the communication networks, wherein the group setting means divides the plurality of apparatuses into the plural groups such that each of the plural groups includes a predetermined number of IP addresses of the networks.

[0028]

20 The remote control system according to claim 16 of the present invention is as follows. In the system of claim 2 or 7, the central control system further includes means for performing alteration and addition onto the information processed by the information processing means.

25 The remote control system according to claim 17 of the present invention is as follows. In the system of claim 2 or 7, the central control system further includes means for setting a destination to which the information is transmitted by the information transmission means.

[0029]

The remote control system according to claim 18 of the present invention is as follows. In the system of claim 2 or 7, the central control system further includes means for outputting the information processed by the information processing means by means of at least one of a displayed image, an image on a paper sheet and a voice.

[0030]

The remote control system according to claim 19 of the present invention is as follows. In the system of claim 2 or 7, the central control system further includes means for transmitting the information processed by the information processing means to any one of the computer systems or terminal units, when the one of the computer systems or terminal units request for acquiring the processed information.

[0031]

The remote control system according to claim 20 of the present invention includes a central control system including a computer, and a plurality of apparatuses, which are connected with the central control system through telecommunication networks, the central control system receiving information from the plurality of apparatuses by way of the telecommunication networks and remotely controlling the plurality of apparatuses based on the information.

The thus constructed remote control system is characterized in that the central control system includes the following means.

[0032]

Namely, the central control system includes:
information collection means, wherein when the information is received from any one of the plurality of apparatuses to be remotely

controlled which are divided into a predetermined number of plural groups, the information collection means collects, based on a kind of the information presently received, related information from other apparatuses included in the same group except the one of the plurality of apparatuses, 5 from which the information is originally transmitted;

first information processing means for processing the information received from the one of the plurality of apparatuses and the related information which is collected by the information collection means;

first information transmission means for making a transmission 10 connection with computer systems or terminal units provided in a plurality of service centers each of which controls apparatuses of the plurality of apparatuses included in a corresponding group of the plural groups, to transmit the first information processed by the information processing means thereto;

information accumulation means for accumulating the information, 15 when the information is received from the one of the plurality of apparatuses to be remotely controlled;

information retrieval means for retrieving, based on a kind of the information received from the one of the plurality of apparatuses, related 20 information which is stored in the information accumulating means and which has been received from other apparatuses included in the same group except the one of the plurality of apparatuses, from which the information is originally transmitted;

second information processing means for processing the information 25 which is received from any one of the plurality of apparatuses and the related information which is retrieved by the information retrieval means;

second information transmission means for making a transmission

connection with the computer systems or terminal units provided in the plurality of service centers each of which controls apparatuses of the plurality of apparatuses included in the corresponding group of the plural groups, and transmit the information processed by the second information processing means; and

means for permitting either processing operations of the information collection means, the first information processing means, and the first information transmission means, and processing operations of the information retrieval means, the second information processing means, and the second information transmission means, or prohibiting both of the processing operations.

[0033]

The remote control method according to claim 21 of the present invention is a method for controlling a plurality of apparatuses such as image forming apparatuses, which are connected with a central control system through telecommunication networks, by receiving information from the plurality of apparatuses by way of the respective telecommunication networks, and remotely controlling the plurality of apparatuses based on the information.

This remote control method is characterized as follows.

[0034]

The method includes the steps of:

upon receiving the information such as pre-maintenance information and information about expendable supplies and material, collecting, by the central control system, information related to the received information from other apparatuses included in the same group except an apparatus, from which the information is originally transmitted, wherein the plurality

of apparatuses are divided into the plural groups;
processing the received information and the collected information;
making a transmission connection with respective computer systems
or terminal units provided in a plurality of service centers each of which
5 controls apparatuses of the plurality of apparatuses included in a
corresponding group of the plural groups; and
transmitting the processed information thereto.

[0035]

The remote control method according to claim 22 of the present
10 invention is a method for controlling a plurality of apparatuses such as
image forming apparatuses, which are connected with a central control
system through telecommunication networks, by receiving information
from the plurality of apparatuses by way of the respective
telecommunication networks, and controlling remotely the plurality of
15 apparatuses based on the information.

This remote control method is characterized as follows.

[0036]

The method includes the steps of:
accumulating the information in a memory unit, when the
20 information, which relates to pre-maintenance and to expendable supplies
and material, is received from any one of the plurality of apparatuses,
wherein the plurality of apparatuses are divided into plural groups;
retrieving related information stored in the memory unit, based on a
kind of the information presently received, the related information having
25 been received from other apparatuses included in the same group except
the one of the plurality of apparatuses, from which the information is
originally transmitted;

processing the received information and the retrieved information; making a transmission connection with respective computer systems or terminal units provided in a plurality of service centers each of which controls apparatuses of the plurality of apparatuses included in a corresponding group of the plural groups; and
5 transmitting the processed information processed thereto.

[0037]

The remote control method according to claim 23 of the present invention is as follows. In the method of claim 21 or 22, the method
10 further includes the step of:

performing alteration and addition onto the processed information with the central control system.

The remote control method according to claim 24 of the present invention is as follows. In the method of any one of claims 21 to 23, the method further includes the step of:
15

outputting the processed information by means of at least one of a displayed image, an image on a paper sheet and a voice with the central control system.

[0038]

The remote control method according to claim 25 of the present invention is as follows. In the method of any one of claims 21 to 24, the method further includes the step of:
20

transmitting the processed information to the computer systems or terminal units with the central control system, when any one of the computer systems or the terminal units request for acquiring the processed information.
25

[0039]

The central control system according to claim 26 of the present invention is a central control system which is connected with a plurality of apparatuses such as image forming apparatuses through telecommunication networks, wherein the central control system receives information from the plurality of apparatuses by way of the telecommunication networks and 5 remotely controls the plurality of apparatuses, based on the information.

The thus constructed central control system is characterized by including the following means.

[0040]

Namely, the central control system includes information collection means, wherein the information, which relates to information such as pre-maintenance information and information about expendable supplies and material, is received from any one of the plurality of apparatuses to be 10 remotely controlled, which apparatuses are divided into a predetermined number of plural groups, the information collection means collects, based on a kind of the information presently received, related information from other apparatuses included in the same group except the one of the 15 plurality of apparatuses, from which the information is originally transmitted.

[0041]

The central control system according to claim 27 of the present invention is as follows. In the system of claim 26, the system further includes:

information processing means for processing the information which 25 is received from the one of the plurality of apparatuses and the related information which is collected by the information collection means; and information transmission means for making a transmission

connection with computer systems or terminal units provided in a plurality of service centers each of which controls apparatuses of the plurality of image forming apparatuses included in a corresponding group of the plural groups, to transmit the information processed by the information processing means thereto.

5

[0042]

The central control system according to claim 28 of the present invention is as follows. In the system of claim 26 or 27, the system further includes:

10 means for setting in advance a kind of the information, which the information collection means is allowed to collect.

10

[0043]

The central control system according to claim 29 of the present invention is a central control system which is connected with a plurality of apparatuses such as image forming apparatuses through telecommunication networks, wherein the central control system receives information from the plurality of apparatuses by way of the telecommunication networks and remotely controls the plurality of apparatuses, based on the information.

15

The thus constructed central control system is characterized by including the following means.

20

[0044]

Namely, the central control system includes:

information accumulation means for accumulating the information, which relates to information such as pre-maintenance information and 25 information about expendable supplies and material, when the information is received from any one of the plurality of apparatuses to be remotely controlled, which are divided into a predetermined number of plural

groups; and

information retrieval means for retrieving, based on a kind of the information received from the one of the plurality of apparatuses, related information which is stored in the information accumulating means and which has been received from other apparatuses included in the same group except the one of the plurality of apparatuses, from which the information is originally transmitted.

[0045]

The central control system according to claim 30 of the present invention is as follows. In the system of claim 29, the system further includes:

information processing means for processing the information which is received from the plurality of apparatuses and the related information which is retrieved by the information retrieval means; and

information transmission means for making a transmission connection with computer systems or terminal units provided in a plurality of service centers each of which controls apparatuses of the plurality of image forming apparatuses included in a corresponding group of the plural groups, to transmit the information processed by the information processing means thereto.

[0046]

The central control system according to claim 31 of the present invention is as follows. In the system of claim 29 or 30, the system further includes:

means for setting in advance a kind of the information, which the information retrieval means is allowed to retrieve.

The central control system according to claim 32 of the present

invention is as follows. In the system of any one of claim 26 to 31, the system further includes:

group setting means for setting the plural groups of the plurality of apparatuses.

5 [0047]

The central control system according to claim 33 of the present invention is as follows. In the system of claim 27 or 30, the system further includes:

means for performing alteration and addition onto the information
10 processed by the information processing means.

The central control system according to claim 34 of the present invention is as follows. In the system of claim 27 or 30, the system further includes:

means for setting a destination to which the information is
15 transmitted by the information transmission means.

[0048]

The central control system according to claim 35 of the present invention is as follows. In the system of claim 27 or 30, the system further includes:

20 means for outputting the information processed by the information processing means by means of at least one of a displayed image, an image on a paper sheet and a voice.

[0049]

The central control system according to claim 36 of the present invention is as follows. In the system of claim 27 or 30, the system further includes:

means for transmitting the information processed by the information

processing means to any one of computer systems or terminal units, when the one of the computer systems or terminal units request for acquiring the processed information.

[0050]

5 The central control system in a remote control system according to claim 37 of the present invention is a central control system which is connected with a plurality of apparatuses such as image forming apparatuses through telecommunication networks, wherein the central control system receives information from the plurality of apparatuses by way of the telecommunication networks and remotely controls the plurality of apparatuses, based on the information.
10

The thus constructed central control system is characterized by including the following means.

[0051]

15 Namely, the central control system includes:
information collection means, wherein when the information, which relates to information such as pre-maintenance information and information about expendable supplies and material, is received from any one of the plurality of apparatuses to be remotely controlled, which are divided into a predetermined number of plural groups, the information collection means collects, based on a kind of the information presently received, information related to the received information from other apparatuses included in the same group except the one of the plurality of apparatuses, from which the information is originally transmitted;
20

25 first information processing means for processing the information received from the one of the plurality of apparatuses and the related information which is collected by the information collection means;

first information transmission means for making a transmission connection with computer systems or terminal units provided in a plurality of service centers each of which controls apparatuses of the plurality of image forming apparatuses included in a corresponding group of the plural groups, to transmit the information processed by the information processing means thereto;

information accumulation means for accumulating the information when the information is received from the one of the plurality of apparatuses to be remotely controlled;

information retrieval means for retrieving, based on a kind of the information received from the one of the plurality of apparatuses, related information which is stored in the information accumulating means and which has been received from other apparatuses included in the same group except the one of the plurality of apparatuses, from which the information is originally transmitted;

second information processing means for processing the information which is received from any one of the plurality of apparatuses and the related information which is retrieved by the information retrieval means;

second information transmission means for making a transmission connection with the computer systems or the terminal units provided in the plurality of service centers each of which controls the apparatus of the plurality of image forming apparatuses in the corresponding group of the plural groups, to transmit the information processed by the information processing means; and

means for permitting either processing operations of the information collection means, the first information processing means, and the first information transmission means, or processing operations of the

information retrieval means, the second information processing means, and the second information transmission means, or prohibiting both of the processing operations.

[0052]

5 The computer readable medium according to claim 38 of the present invention is a computer readable medium storing computer program for carrying out a method in a computer of a central control system, wherein the computer receives information from a plurality of apparatuses such as image forming apparatuses, which are connected with the computer through 10 telecommunication networks, and remotely controls the plurality of apparatuses based on the information.

The method includes the steps of:

15 upon receiving the information such as pre-maintenance information and information about expendable supplies and material, performing an information collection function to collect information related to the information from other apparatuses included in the same group except the apparatus, from which the information is originally transmitted.

[0053]

20 The computer readable medium according to claim 39 of the present invention is as follows. In the recording medium of claim 38, the method further includes:

25 performing a processing function to process the received information and the information collected by the information collection function; and

 performing an information transmitting function to transmit the processed information after transmissively connecting to respective computer systems or terminal units provided in a plurality of service

centers each of which controls apparatuses of the plurality of image forming apparatuses included in a corresponding group of the plural groups.

[0054]

5 The computer readable medium according to claim 40 of the present invention is as follows. In the recording medium of claim 38 or 39, the method includes the step of:

performing a function to set in advance a kind of the information, which the information collection function is allowed to collect.

[0055]

10 The computer readable medium according to claim 41 of the present invention is a computer readable medium storing computer program for carrying out a method in a computer of a central control system, wherein the computer receives information from a plurality of apparatuses such as image forming apparatuses, which are connected with the computer through telecommunication networks, and remotely controls the plurality of apparatuses based on the information.

The method includes the steps of:

20 performing an information accumulation function to accumulate the information, when the information, which relates to pre-maintenance and expendable supplies and material, is received from any one of the plurality of apparatuses to be remotely controlled; and

25 performing an information retrieval function to retrieve, based on a kind of the information presently received, related information from other apparatuses included in the same group except the one of the plurality of apparatuses, from which the information is originally transmitted.

[0056]

The computer readable medium according to claim 42 of the present

invention is as follows. In the recording medium of claim 41, the method further includes the steps of:

performing a processing function to process the information which is received from the one of the plurality of apparatuses and the related information retrieved by the information retrieval function; and

5 performing an information transmission function to transmit the processed information after transmissively connecting to respective computer systems or terminal units provided in a plurality of service centers each of which controls apparatuses of the plurality of image forming apparatuses included in a corresponding group of the plural groups.

10 [0057]

The computer readable medium according to claim 43 of the present invention is as follows. In the medium of claim 41 or 42, the method further includes the steps of:

15 performing a function to set in advance a kind of the information, which the information retrieval function is allowed to retrieve.

[0058]

The computer readable medium according to claim 44 of the present invention is as follows. In the medium of any one of claims 38 to 43, the method further includes the steps of:

20 performing a group setting function to set the groups of the plurality of image forming apparatuses.

The computer readable according to claim 45 of the present invention is as follows. In the medium according to claim 39 or 42, the method further includes the steps of:

25 performing a function to perform alteration and addition onto the information processed by the information processing function.

[0059]

The computer readable medium according to claim 46 of the present invention is as follows. In the medium of claim 39 or 42, the method further includes the steps of:

5 performing a function to set a destination to which the information is transmitted by the information transmission function.

The computer readable medium according to claim 47 of the present invention is as follows. In the recording medium of claim 39 to 42, the method further includes the steps of:

10 performing a function to output the information processed by the information processing function by means of at least one of a displayed image, an image on a paper sheet and a voice.

[0060]

The computer readable medium according to claim 48 of the present invention is as follows. In the recording medium of claim 39 or 42, the method further includes the steps of:

performing a function to transmit the information processed by the information processing function, when any one of computer systems or terminal units request for acquiring the processed information.

20 [0061]

The computer readable medium according to claim 49 of the present invention is a computer readable medium storing computer program for carrying out a method in a computer of a central control system, wherein the computer receives information from a plurality of apparatuses such as image forming apparatuses, which are connected with the computer through telecommunication networks, and remotely controls the plurality of apparatuses based on the information.

The method includes the steps of:

upon receiving the information such as pre-maintenance information and information about expendable supplies and material, performing an information collection function to collect information related to the
5 information from other apparatuses included in the same group except an apparatus, from which the information is originally transmitted;

performing a first processing function to process the received information and the information collected by the information collection function;

10 performing a first information transmission function to transmit the processed information processed by the first information processing function after transmissively connecting to respective computer systems or terminal units provided in a plurality of service centers each of which controls apparatuses of the plurality of apparatuses included in a corresponding group of the plural groups;

15 performing an information accumulation function to accumulate information, when the information, which relates to pre-maintenance and expendable supplies and material, is received from any one of the plurality of apparatuses to be remotely controlled;

20 performing an information retrieval function to retrieve, based on a kind of the information presently received, related information from other apparatuses included in the same group except the one of the plurality of apparatuses, from which the information is originally transmitted;

25 performing a second processing function to process the received information and the related information retrieved by the information retrieval function;

performing a second information transmission function to transmit

the processed information processed by the second processing function after transmissively connecting to the respective computer systems or terminal units provided in the plurality of service centers each of which controls the apparatuses of the plurality of image forming apparatuses included in the corresponding group of the plural groups; and

5 performing a function to permit either the processing operations of the information collection function, the first information processing function, and the first information transmission function, or the processing operations of the information retrieval function, the second information processing function, and the second information transmission function, or to prohibit both of the processing operations.

[0062]

[DESCRIPTION OF THE PREFERRED EMBODIMENTS]

Preferred embodiments of the present invention will be detailed herein below referring to drawings.

15 FIG. 1 is a block diagram illustrating the construction of a remote control system for the image forming apparatuses (hereinafter referred to as image forming apparatus control system), and FIG. 2 is a block diagram illustrating the configuration of a center system (or central control system) included in the image forming apparatus control system, and service locations, according to one embodiment disclosed herein.

[0063]

The image forming apparatus control system includes at least the center system 1 installed at a service center S, a plurality of electronic apparatuses provided on the side of various customers (users) A, B, . . . , 25 and a plurality of terminal units 7a, 7b, . . . 7n (or computer systems including the terminal units) located at respective service centers.

Incidentally, exchange systems for the customers A, B, ... are herein abbreviated in the drawing.

[0064]

5 The center system 1 is thus provided with a plurality of client computers (hereinafter referred to as clients) 2a, 2b, ... 2n, and a server 3, which are interconnected via the network system 4 such as LAN.

10 The clients 2a, 2b, ... 2n are, in turn, connected respectively either to communication adapters 11, 12, ... of respective customers (the side of users) A, B, ... via the public switched telephone network 5 (or other communication network), or to the terminal units 7a, 7b, ... 7n located respectively at service centers via the net work system 6 (or other communication network) such as LAN.

[0065]

15 Being located at respective service centers, the terminal units 7a, 7b, ... 7n are utilized to control the plurality of image forming apparatuses (or other apparatuses to be controlled), which are provided by a plurality of customers (users) A, B, ... , and are divided into the predetermined number of groups.

[0066]

20 On the side of customer A (FIG. 1), there provided are a communication adapter 11 to be utilized for connecting electronic apparatuses to the center system 1 in the service center S via the public switched telephone network 5 (or other communication network), a plurality of image forming apparatuses such as a facsimile apparatus (FAX) 12, copying machine 13, printer 14 and printing machine 15.

25 In addition, the image forming apparatuses and communication adapter 11 are further interconnected with a wire exclusive interface (I/F)

16.

[0067]

On the side of customer B, there provided are another communication adapter 21 to be utilized for connecting electronic apparatuses to the center system 1 in the service center S via the public switched telephone network 5, a plurality of image forming apparatuses such as a facsimile apparatus (FAX) 22, copying machine 23 and printer 24.

5

In addition, the image forming apparatuses and communication adapter 21 are further interconnected with a wireless exclusive interface 10 (I/F) 26.

[0068]

The wireless exclusive I/F 26 includes at least plural wireless communication apparatuses 26a, 26b and 26c which are connected to the communication adapter 21, copying machine 23 and printer 24, respectively.

15

Incidentally, a network such as LAN may alternatively be used in place of either wire exclusive I/F 16 or wireless exclusive IF 26, which will be detailed later on.

[0069]

20

FIG. 3 is a block diagram illustrating the configuration of the clients 2a, 2b, ... 2n, and the server 3, of FIG. 2.

25

The client 2a includes at least CPU 31, real time clock circuit 32, read only memory (ROM) 33, random access memory (RAM) 34, communication control units 35a, 35b, ... , external memory control unit 36, display control unit 37, keyboard I/F circuit unit 38, network I/F unit 39, hard disk unit 40, CRT display 41 and keyboard 42.

[0070]

Incidentally, since the configuration of the client 2b is similar to that of the client 2a described just above, the graphic representation and description thereof are abbreviated herein with the exception of the network I/F unit 39.

5 In addition, since other clients in the center system 1 are each have a similar configuration to that of the client 2a, the drawing and description thereof are abbreviated herein.

[0071]

10 The CPU 31 operates as a central processing unit to take overall control of the client 2a by means of control programs. The real time clock circuit 32 generates time information which is read by the CPU 31 to be used in the control, and the ROM 33 is a read only memory unit for storing various fixed data to be utilized by the CPU 31.

[0072]

15 The RAM 34 is a rewritable memory unit to be utilized by the CPU 31 as a working memory for data processing. The communication control units 35a, 35b each take control of communicating with various external units via the public switched telephone network 5, and the external memory control unit 36 takes interface control of the hard disk unit (HDD) 40.

20 [0073]

The display control unit 37 takes interface control of the CRT display 41 (or other display unit such as LCD display, as well).

25 The keyboard I/F circuit unit 38 takes interface control of the keyboard 42. Similarly, the network I/F unit 39 takes interface control of other clients such as including 2b, for example, and the server 3.

[0074]

The server 3 includes at least CPU 51, real time clock circuit 52,

ROM 53, RAM 54, external memory control unit 55, display control unit 56, keyboard I/F circuit unit 57, network I/F unit 58, HDD 59, CRT display 60 and keyboard 61.

The CPU 51 operates as a central processing unit to take overall control of the server 3 by means of control programs stored in the ROM 53.

[0075]

The real time clock circuit 52 generates time information which is read by the CPU 51 to be used in the control of the server 3. The ROM 53 is a read only memory unit for storing various fixed data to be utilized by the CPU 51, and the RAM 54 is a rewritable memory unit to be utilized for data processing by the CPU 51 as a working memory for data processing.

[0076]

The external memory control unit 55 takes interface control of the HDD 59. The HDD 59 stores several data including at least the customer data base (DB) 59a and the temporal reception DB 59b, shown in FIG. 2.

[0077]

As shown in FIGS. 4 and 5, the customer DB 59a is adapted to store various pieces of information (customer information) utilized to specify the customers, consisting of the name and model of the apparatus; ID, name, address, area code, building name and floor number of the customer; name and phone number of the person in charge; name, model, unit number and connection ID of the communication adapter; name, address, engineer personnel (or service engineer in charge) of respective service depots.

[0078]

The temporal reception DB 59b is adapted to store temporal information which is received from the customers A, B,... as shown in FIG.

6, consisting of time of receiving the information (year, month, day, hour and minute); name, model and manufacturing number of the apparatus; reception ID code; detailed data, information regarding the propriety for the maintenance operation and so on.

5

[0079]

The display control unit 56 takes interface control of the CRT display 60 (or other display unit such as LCD display, as well). The keyboard I/F circuit unit 57 takes interface control of the keyboard 61. Similarly, the network I/F unit 58 takes interface control of other clients 2a, 10 2b, ... 2n connected to the network 4.

15

[0080]

FIG. 7 is a block diagram illustrating the construction of the communication adapter 11 of FIG. 1. Since the configuration of the communication adapter 21 is similar to that of the adapter 11, the graphic representation and description thereof are herein abbreviated.

20

Referring to FIG. 7, a variety of data sent through the public switched telephone network 5 is first input to a line transfer switch 71. If the data transmission from the network 5 is addressed to the FAX 12 connected to the communication adapter 11, the line transfer switch 71 is adapted to connect the network 5 to the FAX 12. In contrast, if the data transmission is sent from the center system 1, the switch 71 is adapted to connect the network 5 to the modem 72.

[0081]

25

In addition, the communication adapter 11 is adapted to communicate with the image forming apparatus such as copying machine 13 by means of the communication interface (Serial I/O or S I/O) 73 using an RS-485 type transceiver, for example. These control and processing

operations are conducted primarily by CPU 74 according to control programs.

The RAM 76 is in use for tentatively storing a variety of data and supplied with a backup battery 77 connected thereto.

5

[0082]

The switch 78 is adapted to selectively switch among various modes of the processing operation. Further, the communication adapter 11 is designed to perform poling actions consistently and periodically onto respective image forming apparatuses connected thereto, which is performed in the order of device address.

10

[0083]

FIG. 8 is a schematic diagram illustrating the construction of a further remote control system for the image forming apparatuses according to another embodiment disclosed herein. It is noted that like reference numerals in FIG. 8 designate identical or corresponding parts of FIG. 1.

The image forming apparatus control system includes at least the center system 1 installed at a service center S, a plurality of electronic apparatuses provided on the side of various customers A, B, ... , a plurality of terminal units 7a, 7b, ... 7n (or computer systems including the terminal units) located at respective service centers, in a similar manner as shown in FIG. 2.

Incidentally, exchange systems for the customers A, B, ... are herein abbreviated in the present drawing.

[0084]

The center system 1 is thus provided with a plurality of client computers (hereinafter referred to as clients) 2a, 2b, ... 2n, and a server 3, which are interconnected via the net work system 4 such as LAN.

25

The clients 2a, 2b, ... 2n are, in turn, connected respectively either to network (NW) control unit 87 or communication adapters 96, ... via the public switched telephone network 5 (or other communication network), or to the terminal units 7a, 7b, ... 7n located respectively at service centers
5 via the net work system 6 (or other communication network) such as LAN.

[0085]

On the side of customer A there provided are several image forming apparatus as the electronic apparatuses, including a FAX 81, printers 82 and 83, copying machine 84 and printing machine 85. These apparatuses are then interconnected via the net work system 86 such as LAN. In addition, the NW control unit 87 is adapted to properly interconnect the network 86 and the public switched telephone network 5 (or other communication network).

[0086]

On the side of customer B there provided as the electronic apparatuses are several image forming apparatus, including a FAX 91, printers 92 and copying machine 93. These apparatuses are then connected via the net work system 94 such as LAN. In addition, the NW control unit 95 is adapted to properly interconnect the network 94 and the public switched telephone network 5 (or other communication network).

[0087]

Further, the FAX 91 with the network 94 is made directly connectable to the public switched telephone network 5, the communication adapters 96 is provided between the NW control unit 95 and the public switched telephone network 5; and the above noted FAX 91, that is directly connectable to the public switched telephone network 5, is connected to the communication adapters 96.

Incidentally, when any other image forming apparatus is available to be connectable directly to the public switched telephone network 5, this apparatus can be connected to the communication adapters 96.

[0088]

5 In addition, the configuration of the clients 2a, 2b, ... 2n, and the server 3 is broadly similar to that previously shown in FIG. 3, with the exception that the content, which is stored in the customer DB 59a in the server 3, is slightly different from that shown in FIGS. 4 and 5.

10 Namely, data consisting of unit name, model, manufacture number and network address (IP address) of the network control system are included in place of name, model, unit number and connection of the communication adapter.

[0089]

15 FIG. 9 is a block diagram illustrating the construction of the communication adapter 96 of FIG. 8. Like reference numerals in FIG. 9 designate identical or corresponding part in FIG. 7, and the description on the identical portions is herein abbreviated.

20 The communication adapter 96 is adapted to communicate with the NW control unit 95 by means of the communication interface (S I/O) 73 using an RS-485 type transceiver, for example.

[0090]

25 The center system 1 of FIGS. 1 and 8 is then able to implement various modes of the present disclosure. Namely, systems and process steps disclosed in the present description may be implemented by executing a plurality of programs stored in various storage media.

For example, storage media may be prepared for storing a variety of programs in the center system 1 to execute the above described steps for

processing information and deciding conditions. The storage media may include computer accessible storage media such as an external floppy disk and optical disk, among others. These storage media may subsequently be installed into an internal HDD unit, non-volatile RAM or RAM, to thereby 5 be able execute necessary steps to embody the various modes of the present disclosure according to various programs.

[0091]

After describing the embodiments of the system, method and storage medium herein above in reference to FIGS. 1 and 8, information process 10 steps implemented in the image forming apparatus will be detailed according to specific embodiments referring to FIGS. 10 through 22.

Also in the following description referring to drawings, FIGS. 10 through 16 each contain flow charts illustrating information process flows for respective embodiments, in which the number of each step is headed by 15 'S' for abbreviation.

[0092]

[FIRST EMBODIMENT: FIG. 10]

FIG. 10 includes a flow chart illustrating an information process flow for the center system 1 including a plurality of clients 2a, 2b, ... 2n 20 according to claims 1 and 26 (the first embodiment).

[0093]

The clients 2a, 2b, ... 2n in the center system 1 each initiate regularly and periodically the process steps shown in the figure as follows.

In step 1, an inquiry is made regarding whether information is 25 received from any one of the plurality of image forming apparatuses (FIG. 1 or 8), which are provided by a plurality of customers A, B, ..., and divided into the predetermined number of groups. If the information is

received already from any of the image forming apparatuses, the process proceeds to Step 2, where a program is executed to identify the kind of the received information.

[0094]

5 Subsequently, the thus received information is processed in step 3 so as to be accumulated into a temporal reception DB 59b (memory) included in the server 3.

10 After completing Step 3, the process proceeds to Step 4, where a program is executed, in response to the kind of the received information identified as above, to collect the corresponding information from other image forming apparatuses included in the same group except the image forming apparatus, from which the information is originally received.

[0095]

15 As an example, when the client 2a included in the center system 1 receives, from one of image forming apparatuses within its interconnection, information regarding the arrival of the pre-maintenance date (or pre-maintenance date information), several steps are executed so as to identify the kind of the thus received information, to store (or accumulate) the information into a temporal reception DB 59b in the server 3, and then to
20 collect, in response to the kind of the received information, the information related to the arrival of the pre-maintenance date (pre-maintenance date information) from other image forming apparatuses included in the same groups except the image forming apparatus, from which the information is originally transmitted.

25 [0096]

Namely, based on the kind of the received information thus obtained, by sending out sensing instructions to other image forming apparatuses

included in the same groups within its interconnection except the image forming apparatus, from which the information is originally transmitted (i.e., to other image forming apparatuses included in the same group except the image forming apparatus, from which the pre-maintenance date information is transmitted), responded information (on the pre-maintenance date) can thus be collected from all of other image forming apparatuses.

[0097]

Based on the content of the thus collected information, it becomes feasible to decide whether any of the other image forming apparatuses reaches its pre-maintenance date, subsequently to arrange a pre-maintenance for the image forming apparatuses for which the pre-maintenance date is reached, if any.

[0098]

For example, if the service center is 'Yokohama SS' included in FIG. 5 for controlling the other image forming apparatuses within its interconnection, image forming apparatuses to be presently subjected can be identified, by retrieving the customer DB 59a, as those having the name and number apparatus such as 「XX … 1」, 「XX … 5」 and 「XX … m」. By subsequently sending out sensing instructions to those image forming apparatuses based on the thus retrieved information, responded information transmitted back from each of the presently subjected apparatuses can thus be collected.

[0099]

Subsequently, based on the content of the thus collected responded information, inquiry is made whether image forming apparatuses 「XX … 1」, 「XX … 5」 and 「XX … m」 each reach their respective pre-maintenance dates.

When image forming apparatuses among those are found, if any, to reach the pre-maintenance date, this result is reported to be subjected to possible maintenance process.

[0100]

5 As described above, when information is received by the respective clients 2a, 2b, ... , 2n in the center system 1 from any one of the plurality of image forming apparatuses, which are divided into a predetermined number of groups, the center system 1 instructs to collect responded information from all of the image forming apparatuses included in the same 10 group within its interconnection except the image forming apparatus, from which the information is originally transmitted.

With the thus collected information, a service engineer can therefore deal with incoming information by effective remedial measures in efficient and economical manner when the information is received. As a result, the 15 efficiency of maintenance service activity is increased with a reduced cost of service operations.

[0101]

[SECOND EMBODIMENT: FIG. 11]

FIG. 11 includes a flow chart illustrating an information process 20 flow for the center system 1 including a plurality of clients 2a, 2b, ... 2n according to claims 6 and 29 (the second embodiment).

[0102]

The clients 2a, 2b, ... 2n in the center system 1 each initiate regularly and periodically the process steps shown in the figure as follows.

25 The process begins in step S11 where an inquiry is made regarding whether information is received from any one of the plurality of image forming apparatuses, which are provided by a plurality of customers A,

B, ..., and which are divided into a predetermined number of groups.

If the information is received from any of the image forming apparatuses already, the process proceeds to Step 12, where a program is executed to identify the kind of the received information.

5 [0103]

Subsequently, the thus received information is processed in step 13 so as to be accumulated into the temporal reception DB 59b included in the server 3. The process then proceeds to step 14, where a program is executed, in response to the kind of the received information identified above, to retrieve from the temporal reception DB 59b the corresponding information which is received from other image forming apparatuses included in the same group except the image forming apparatus, from which the information is originally received.

[0104]

15 For example, if the service center is 'Yokohama SS' included in FIG.
5 for controlling the other image forming apparatuses within its
interconnection,
image forming apparatuses to be presently subjected can be identified, by
retrieving the customer DB 59a, as those having the name and number of
the apparatus such as 「XX … 1」, 「XX … 5」 and 「XX … m」 (in
20 response to the pre-maintenance information received, in the present case).

[0105]

Based on the retrieved information, an inquiry is subsequently made whether there exists, among the apparatuses 「XX … 1」, 「XX … 5」 and 「XX … m」, for which no processing action has been taken based on the pre-maintenance information (i.e., the information notifying the arrival of the pre-maintenance date). When such image forming apparatuses are

found, they are then subjected to possible maintenance process.

[0106]

For example, an assumption is made in that the information reception ID code is 「80」 for that notifying the arrival of the pre-maintenance date, as shown in FIG. 6. Accordingly, there retrieved are the apparatuses 「XX … 10」, 「XX … 01」, 「XX … 31」 and 「XX … 02」. Since the maintenance process was already completed (= 0) for 「XX … 10」 as indicated in the fifth column of the table, the above retrieved apparatuses except the apparatus 「XX … 10」 are therefore subjected to the maintenance process.

[0107]

As described above, when information is received by the respective clients 2a, 2b, …, 2n in the center system 1 from any one of the plurality of image forming apparatuses, which are divided into a predetermined number of groups, the center system 1 instructs to accumulate the received information into the temporal reception DB 59b, and to retrieve from the temporal reception DB 59b, in response to the kind of the received information obtained previously, the related information already received from all of the other image forming apparatuses included in the same group except the image forming apparatus, from which the information is originally transmitted.

[0108]

With the thus retrieved information in a similar manner to the first embodiment, a service engineer can therefore deal with incoming information by effective remedial measures in efficient and economical manner when the information is received.

In addition, the center system 1 does not instruct to collect additional information in the present embodiment, thereby incurring no additional cost of communication. As a result, the cost of the service operation is further reduced.

5 [0109]

[THIRD EMBODIMENT: FIGS. 12 and 17]

FIG. 12 includes a flow chart illustrating an information process flow for the center system 1 including a plurality of clients 2a, 2b, ... 2n according to claims 2, 7, 21, 22, 27 and 30 (the third embodiment).

10 [0110]

The clients 2a, 2b, ... 2n in the center system 1 each initiate regularly and periodically the process steps shown in FIGS. 10 and 11, and subsequently the steps shown in FIG. 12 are additionally carried out.

These steps of FIG. 12 are also initiated regularly and periodically in
15 similar manner to those of FIGS. 10 and 11, in which an inquiry is made first in Step 21 whether any information is present regarding to the information either collected in process steps of FIG. 10, or retrieved in process steps of FIG. 11.

If such information is present, the process proceeds to Step 22,
20 where a program is executed to proceed as follows.

[0111]

Namely, several pieces of information such as either received from the plurality of image forming apparatuses, which are provided by the plurality of customers A, B, ..., and divided into the predetermined number
25 of groups; collected in the process steps shown in FIG. 10; or retrieved in the process steps shown in FIG. 11, are respectively processed.

[0112]

Next in Step 23, a program is executed for the center system to be transmissively connected to the respective terminal units 7a, 7b, ... 7n (or computer systems), and to transmit the above noted several processed information thereto.

5 These terminal units 7a, 7b, ... 7n are, in turn, already provided by the plurality of service centers to control the plurality of image forming apparatuses, which are provided by a plurality of customers A, B, ..., in a manner divided into a predetermined number of groups.

[0113]

10 As an example, information regarding the arrival of the pre-maintenance date is either received from an image forming apparatus, or from other image forming apparatuses included in the same group except the image forming apparatus, from which the information is originally received; or obtained through retrieval process from the temporal reception 15 DB 59b, the process proceeds as follows.

That is, the record for the currently subjected apparatus is processed for the period ranging from the previous maintenance to the time when the current information is either received, or retrieved from the temporal reception DB 59b. This is exemplified in FIG. 17, as the kind of the fault reported, and the number of monthly occurrence of the fault for this 20 subjected apparatus.

The thus processed information or record is subsequently file transferred to a terminal (or computer system) which is attended by a personnel in charge of the service center, or by a sales engineer (or service 25 engineer) for the area.

[0114]

On the receipt of the processed information from the center system 1,

the terminal instructs for a display unit to display the content of the processed information so as to be readily observed by a terminal operator.

As a result, it becomes feasible for the operator (i.e., the personnel in charge of the service center or the sales engineer in charge of the area) to clearly recognize the trend of the fault occurrence through the graphic representation of the thus received information, and to carry out maintenance operations which are fortified with effective remedial measures further added through the examination of the fault trend which is displayed as above.

10 [0115]

As described above, after completing similar process steps as those of the previous embodiments 1 and 2, the clients 2a, 2b, ... 2n in the center system 1 instructs to further carry out the processing the information either received or retrieved, subsequently be transmissively connected to the respective terminal units 7a, 7b, ... 7n (or computer systems) which are provided by the plurality of service centers so as to control the plurality of image forming apparatuses, and to transmit the above noted several processed information thereto.

20 In addition to the advantages in the previous embodiments, therefore, there are required no information processing at the terminals 7a, 7b, ... 7n (or computer systems). As a result, time and cost for these steps can be reduced.

[0116]

25 It is noted that the connection may alternatively be established directly to a terminal (e.g., handheld computer unit) owned by service engineer, to thereby be able to transfer directly the processed information or data.

[0117]

[FOURTH EMBODIMENT]

In this fourth embodiment, the clients 2a, 2b, ... 2n in the center system 1 carries out similar process steps as those of the previous
5 embodiments 1, 2 and 3.

In addition, the kind of information (i.e., the information received from the plurality of image forming apparatuses which are provided by the plurality of customers A, B, ... , and divided into a predetermined number of groups) to be either received or retrieved can be set in advance by input
10 operations with the keyboard 42 (process steps according to claims 3, 4, 5, 8, 9, 10, 28 and 31).

[0118]

For example, this setting operation may be carried out regarding to the thus items such as pre-maintenance, expendable supplies and material,
15 fault, alarm (which is sent when a specified value is exceeded, although not the fault), and the combination thereof.

[0119]

Accordingly, when information is received regarding to the set items such as, for example, pre-maintenance and supplies from at least one of the
20 plurality of image forming apparatuses (FIG. 1 or 8), which are provided by the plurality of customers A, B, ... and divided into a predetermined number of groups, a program is executed to collect the information related to the set items from other image forming apparatuses included in the same group except the image forming apparatus, from which the information is originally received, and also to retrieve the previously received and stored
25 (or accumulated) information from the temporal reception DB 59b.

[0120]

As described above, the kind of information to be either received or retrieved is set in advance in the present embodiment. Namely, when information is received by the respective clients 2a, 2b, ... , 2n in the center system 1 from any one of the plurality of image forming apparatuses, which are divided into a predetermined number of groups, the center system 1 instructs to collect the information related to the set items from other image forming apparatuses included in the same group except the image forming apparatus, from which the information is originally received, and also to retrieve the previously received and stored (or accumulated) information from the temporal reception DB 59b.

Since these collection and retrieval steps are carried out in response to the kind of information set in advance in the present embodiment, it becomes feasible to alleviate undue process steps and cost of communication, and reduce the work load on to the center system.

[0121]

For example, by setting 'pre-maintenance' as the item for the kind of information to be currently processed, undue time and cost for the operation can be reduced, to thereby result in efficient pre-maintenance activities.

In a similar manner, by setting 'expendable supplies and material' as the item for the kind of information, undue time and cost for the operation again can be reduced, thereby resulting in efficient handling and delivery operations of the supplies and material.

[0122]

[FIFTH EMBODIMENT: FIGS. 18 through 21]

In this fifth embodiment, the clients 2a, 2b, ... 2n in the center system 1 carries out similar process steps as those of the previous

embodiments 1, 2, 3 and 4.

In addition, the plurality of image forming apparatuses which are provided by the plurality of customers A, B, ..., are divided in advance into a predetermined number of groups (process steps according to claims 5 11, 12, 13, 14, 15 and 32). Alternatively, the groups may respectively be assigned to the clients 2a, 2b, ... 2n by input operations with the keyboard 42, for example.

[0123]

To be more specific, this assignment can be carried out in any one of 10 the following manners (1) through (5):

(1) The plurality of groups are set such that the image forming apparatuses, which are provided by the plurality of customers A, B, ..., may respectively be assigned to be divided into a further group specified by the items such as customer's name, service location, dealer's name, 15 sales district, sales department of office, building's name, floor number, apparatus's name, and the combination thereof.

[0124]

(2) In the case where the control system for the image forming apparatuses has the construction shown in FIG. 1, the image forming 20 apparatuses, which are provided by the plurality of customers A, B, C, D, E, ... may be assigned to be divided into another group of the apparatuses each assigned to the communication adapters, as shown in FIG. 18.

[0125]

(3) In the case where the control system for the image forming apparatuses again has the construction again shown in FIG. 1, the image 25 forming apparatuses, which are provided by the plurality of customers A, B, C, D, E, F, G, H, I, J ... may be assigned to be divided into still another

group of the apparatuses each assigned a predetermined number (i.e., five in the present example) of communication adapters, as shown in FIG. 19.

[0126]

(4) In the case where the control system for the image forming apparatuses has the construction interconnected via communication networks as shown in FIG. 8, the image forming apparatuses, which are provided by the plurality of customers A, B, C, D, E, ... may be assigned to be divided into another group of the apparatuses specified by each of IP addresses in the network system (or network control unit), as shown in FIG.

10 20.

[0127]

(5) In the case where the control system for the image forming apparatuses has the construction as shown in FIG. 8, the image forming apparatuses, which are provided by the plurality of customers A, B, C, D, E, F, G, H, I, J ... may be assigned to be divided into another group of the apparatuses specified by each of a predetermined number (i.e., five in the present example) of IP addresses in the network system , as shown with dash-dotted lines in FIG. 21.

[0128]

20 As described above, since the clients 2a, 2b, ... 2n in the center system 1 are each capable of diving in advance the plurality of image forming apparatuses which are provided by the plurality of customers A, B, ... , into a predetermined number of groups in the present embodiment, it becomes feasible to eliminate undue man-hour and cost for the data reprocessing, thereby facilitating a wider use of the present system in various applications.

[0129]

In order to meet a future change in maintenance operations such as, for example, the increase in the number of customers in an area of a service location, a change in the service unit (i.e., one of the above noted division in the group) may become necessary such as from one item (e.g., 5 service location) to another (e.g., customer's name or apparatus name). In such a case, one fixed group of the customer data may necessitates a thorough re-processing of the data, which may require an additional and appreciable period of time.

According to the present embodiment, however, undue waste due to 10 the data re-processing can be alleviated, thereby retaining the overall validity of the present system in processing (or grouping) the information.

[0130]

[SIXTH EMBODIMENT: FIG. 13]

FIG. 13 includes a flow chart illustrating an information process 15 flow for the center system 1 including a plurality of clients 2a, 2b, ... 2n according to claims 16, 23 and 33 (the sixth embodiment).

[0131]

The clients 2a, 2b, ... 2n in the center system 1 each initiate 20 regularly and periodically the process steps shown in FIGS. 10 and 11, and subsequently the steps shown in FIG. 13 are additionally carried out.

The additional steps in FIG. 13 are also initiated regularly and periodically in similar manner to those of FIGS. 10 and 11, in which an inquiry is made first in Step 31 whether any information is present regarding to the information either collected in the process steps shown in 25 FIG. 10, or retrieved in the process steps shown in FIG. 11.

If such information is present, the process proceeds to Step 32, where a program is executed to proceed as follows.

[0132]

Namely, several pieces of information such as either received from the plurality of image forming apparatuses, which are provided by the plurality of customers A, B, ... , and which are divided into the 5 predetermined number of groups; collected in the process steps shown in FIG. 10; or retrieved in the process steps shown in FIG. 11, are respectively processed.

[0133]

Subsequently in Step 33, the steps are taken on the above processed 10 information to make any alteration or addition, if necessary. The necessary items may be exemplified by those such as early action required, propriety for the maintenance operation, customer requirements, technical information and others.

[0134]

15 Further in Step 34, a program is executed for the center system to be transmissively connected to the respective terminal units 7a, 7b, ... 7n (or computer systems), and to transmit the above noted several processed information thereto.

These terminal units 7a, 7b, ... 7n are, in turn, already provided by 20 the plurality of service centers so as to control the plurality of image forming apparatuses, which are provided by a plurality of customers A, B, ... , in a manner divided into a predetermined number of groups.

[0135]

When the clients 2a, 2b, ... 2n in the center system 1 transmit the 25 thus processed information primarily in a fixed format, there may give rise the failure in appropriate responding action. This is caused when an important or most urgent point of the information such as 'occurrence of

the unit failure' in the customer comments is necessary, the fixed format is not sufficient to report the important point, thereby necessitating additional means such as telephone or facsimile, while failing in quick responding action on the other.

5 [0136]

Alternatively, when the clients 2a, 2b, ... 2n in the center system 1 transmits the thus processed information again in a fixed format, the alteration or revision of the transmitted information in that format may necessitate a considerable work load of an operator at the swerve depot,
10 thereby causing additional work load and undue period of time.

[0137]

In this sixth embodiment, since the clients 2a, 2b, ... 2n in the center system 1 are each capable of providing the alteration and addition onto the processed information, the utility of the processed information with the system is further increased by the addition of a requisite and important comment, for example. In addition, more effective measures can be taken in the event where any alteration or addition becomes necessary with the
15 present system.

As a result, more effective and detailed maintenance operations
20 becomes feasible for the image forming apparatuses.

[0138]

[SEVENTH EMBODIMENT]

In this seventh embodiment, the clients 2a, 2b, ... 2n in the center system 1 carries out similar process steps as those of the previous
25 embodiments 3 through 6 (including the steps of transmitting the processed information).

In addition, the destination for the processed information is set in

advance by inputting with the keyboard 42, for example (process steps according to claims 17 and 34).

[0139]

In a similar manner to those of the sixth embodiment, information previously received or retrieved is first processed in Step 32 shown in FIG. 13. After completing Step 32, necessary alteration or addition is made in Step 33, and several terminal units among 7a, 7b, ... 7n (or computer systems), which are set in advance as the destination of information transmission, are transmissively connected for the transmission, and the above processed information is subsequently transmitted thereto in Step 34.

[0140]

As described above, since the clients 2a, 2b, ... 2n in the center system 1 are each capable of setting in advance several terminal units among 7a, 7b, ... 7n (or computer systems), as the destination of information transmission, the processed information can be transferred automatically to respective destinations, to thereby be able reducing the work load of center operators.

[0141]

For example, necessary items, which are noted earlier for the alteration or addition such as early operation required, requisite for the maintenance operation, customer requirements and technical information, are quite important not only for the service section in charge but also for service administration section and in-house quality assurance section, as well. It is therefore preferable to set these related sections as the destination for the processed information.

[0142]

As noted above, the clients 2a, 2b, ... 2n in the center system 1 are

each capable of providing the alteration and addition onto the processed information, and transmitting the thus prepared information to several terminal units set in advance as the destination of information transmission, to thereby be able facilitate various activities for retaining and also 5 improving the qualities of the terminal apparatuses.

[0143]

[EIGHT EMBODIMENT: FIG. 14]

FIG. 14 includes a flow chart illustrating an information process flow for the center system 1 including a plurality of clients 2a, 2b, ... 2n according to claims 18, 24 and 35 (the eight embodiment).
10

[0144]

After completing the process steps shown in FIGS. 10 and 11, in which the clients 2a, 2b, ... 2n in the center system 1 each initiate regularly and periodically, those shown in FIG. 14 are additionally carried out.

15 These additional steps in FIG. 14 are also initiated regularly and periodically in similar manner to those of FIGS. 10 and 11, in which an inquiry is made first in Step 41 whether any information is present regarding to the information either collected in the process steps shown in FIG. 10, or retrieved in the process steps shown in FIG. 11.

20 If such information is present, the process proceeds to Step 42, where a program is executed to proceed as follows.

[0145]

Namely, several pieces of information such as either received from the plurality of image forming apparatuses, which are provided by the 25 plurality of customers A, B, ..., and which are divided into the predetermined number of groups; collected in the process steps shown in FIG. 10; or retrieved in the process steps shown in FIG. 11, are

respectively processed.

[0146]

Subsequently, the clients 2a, 2b, ... 2n in the center system 1 instruct in Step 43 to be transmissively connected to the respective terminal units 5 7a, 7b, ... 7n (or computer systems) which are provided by the plurality of service centers so as to control the plurality of image forming apparatuses. Alternatively, the clients 2a, 2b, ... 2n may instruct to be transmissively connected to several terminal units among 7a, 7b, ... 7n, as the destination of information transmission which is set in advance. The process 10 subsequently proceeds for the processed information to be transmitted to the destination, and to be displayed on CRT display unit 41.

[0147]

Since the clients 2a, 2b, ... 2n in the center system 1 are each capable of displaying the processed information on CRT display unit 41, to 15 thereby facilitating for the center operator to confirm the content of the information with ease, there becomes feasible with the present system are a re-transmission of the information to the terminals following possible alteration or addition of the processed information and a transmission of the information via facsimile and some other means (or backup processing) 20 during interruption of terminal units or the fault of the network.

As a result, input errors by operators can be reduced, the disturbance on the side of terminal units 7a, 7b, ... 7n due to the transmission of the faulty information can also be reduced, and undue workload can be eliminated.

25

[0148]

Alternatively, the clients 2a, 2b, ... 2n in the center system 1 may respectively provide alteration or addition onto the processed information,

and subsequently transmit the thus prepared information to the terminals and display on CRT display unit 41.

In addition, when a speaker or printer is installed with the center system 1, the information following the processing, or alteration or
5 addition, may be output audibly using a voice response (output) unit through a speaker unit, or printed-out (forming images on a sheet) through a printer unit.

[0149]

[NINTH EMBODIMENT: FIGS. 15 and 22]

10 FIG. 15 includes a flow chart illustrating an information process flow for the center system 1 including a plurality of clients 2a, 2b, ... 2n according to claims 19, 25 and 36 (the ninth embodiment).

[0150]

15 After completing the process steps shown either in FIGS. 10 and 11, or in FIGS. 12 through 14, which the clients 2a, 2b, ... 2n in the center system 1 each initiate regularly and periodically, those shown in FIG. 15 are additionally carried out.

[0151]

20 These additional steps in FIG. 15 are also initiated regularly and periodically, in which an inquiry is made first in Step 51 whether any request for acquiring the processed information is received from any one of the terminal units 7a, 7b, ... 7n (or computer systems), that are provided by the plurality of service centers.

If such request is present, a program is executed to send the
25 processed information to the terminal, from which the request is received.

[0152]

Referring to FIG. 22, there detailed herein below are the above noted

request for acquiring the processed information and the responding process thereto.

The terminal units 7a, 7b, ... 7n (or computer systems), which are provided by the plurality of service centers via the network 6, can each 5 issue request to acquire the information which is processed and provided with alteration or addition, at need, by the clients 2a, 2b, ... 2n in the center system 1 (which is altogether referred to hereinafter as 'processed information').

[0153]

10 The data format for requesting the acquisition of the processed information (or data request format) is illustrated in FIG. 22(1). In this figure several items for dividing into group are shown such as customer's name, service location and dealer's name. Further detailed division of the respective items are specified by customer's ID number for the 15 customer's name, or office or department; a code for service location and dealer's name; a unit code for the apparatuses, respectively.

[0154]

When a request for the processed information is received, the clients 2a, 2b, ... 2n in the center system 1 are each adapted to retrieve the 20 temporal reception DB 59b shown in FIG. 6 based on predetermined conditions. The range for the retrieval may be set as related data , for example, over a predetermined period of time.

[0155]

The thus retrieved data are subsequently replied to the sending 25 terminal with a response in the format shown in FIG. 22(2). Incidentally, there is no following data length or data field for the case of x = 2.

[0156]

As described above, since the clients 2a, 2b, ... 2n in the center system 1 are each capable of transmitting processed information to the sending terminal, when any request for acquiring the processed information is received from any one of the terminal units 7a, 7b, ... 7n, it becomes feasible with the present system to carry out recovery operations by just sending a re-issuing request to the center system 1, even in the case of data loss or breakdown due to possible fault of network system 6, or failure or operational error at the side of terminal units 7a, 7b, ... 7n. The occurrence of customer's claims can therefore be alleviated.

10 [0157]

[TENTH EMBODIMENT: FIG. 16]

FIG. 14 includes a flow chart illustrating an information process flow for the center system 1 including a plurality of clients 2a, 2b, ... 2n according to claims 20 and 37 (the tenth embodiment).

15 [0158]

The clients 2a, 2b, ... 2n in the center system 1 each initiate regularly and periodically the process steps shown in FIG. 16 as follows. The process begins in step S61 where an inquiry is made regarding whether information is received from any one of the plurality of image forming apparatuses (FIG. 1 or 8), which are provided by a plurality of customers A, B, ..., and divided into the predetermined number of groups. If the information is received already from any of the image forming apparatuses, the process proceeds to Step 62, where a program is executed to identify the kind of the received information.

25 [0159]

Subsequently, the thus received information is processed in step 63 so as to be accumulated into a temporal reception DB 59b included in the

server 3. A program is then executed in Step 64 either to set a flag for information collection or retrieval, or not to set any such a flag, in response to the kind of the received information identified above.

That is, the program is executed such that either one of the
5 information collection/ processing (i.e., collecting information and related processing of the information, which will be described later on) and information retrieval/ processing (i.e., retrieving information and related processing of the information, which will be described later on) be allowed, or neither be allowed.

10 [0160]

For example, when the latest or updated information is required on other image forming apparatuses included in the same group except the image forming apparatus, from which the information is originally received, the flag for information collection is set (i.e., information collection/ processing is allowed).

15 In contrast, when the received information is one related to less urgent item such as, for example, pre-maintenance (i.e., for which a certain time allowance may be allocated until actual operations are needed by a service engineer), the flag for information retrieval is set (i.e., information retrieval/ processing is allowed).

20 [0161]

When the received information is related to the item other than pre-maintenance, expendable supplies and material, fault, alarm, and when this information is received as a regular (or routine) report which usually contains information on the apparatuses which are not suffered from any anomaly, neither the flag for information collection or retrieval is set (i.e., neither the collection/ processing or retrieval/ processing of information is

allowed).

[0162]

After completing Step 64, the process proceeds to Step 65, where a program is executed to check whether an information collection flag is set.

5 Thereafter, if the flag is set, collection/ processing steps are carried out, in response to the kind of received information, on the corresponding information (on the pre-maintenance) received from image forming apparatuses included in the same group except that the image forming apparatus, from which the information is originally received.

10

[0163]

If no flag is set, the process proceeds to Step 67, where a program is executed to check whether an information retrieval flag is set.

15 If no flag is set, the process of FIG. 16 ends. In contrast, if the flag is set, retrieval/ processing steps are carried out in response to the kind of received information, by retrieving from the temporal reception DB 59b the corresponding information (on the pre-maintenance) received from image forming apparatuses included in the same group except the image forming apparatus, from which the information is originally received.

20 [0164]

Subsequently, the process proceeds to follow any one of the group of steps shown in FIGS. 12 through 14, in which, in the case where collection/ processing steps are previously carried out, the information received from the plurality of image forming apparatuses which are provided by the plurality of customers A, B, . . . , and divided into a predetermined number of groups, and the information collected through the steps of FIG. 16, are both processed.

25 [0165]

In the case where retrieval/ processing steps are previously carried out, the information received from the plurality of image forming apparatuses which are provided by the plurality of customers A, B, . . . , and divided into a predetermined number of groups, and the information 5 retrieved through the steps of FIG. 16, are both processed.

[0166]

As described above, in response to the kind, that is previously determined, of the information received from any one of the plurality of image forming apparatuses divided into a predetermined number of groups, 10 the clients 2a, 2b, . . . 2n in the center system 1 are each capable of instructing to either one of the information collection/ processing step and retrieval/ processing step be allowed, or neither of the steps be allowed.

As a result, undue process steps and cost of communication can be alleviated, and the work load onto the center system can be reduced, to thereby be able to retain the overall validity of the present system in handling and processing the information. 15

[0167]

[STORAGE MEDIA]

The systems and process steps set forth in the present description 20 may be implemented by executing a plurality of programs stored in various storage media. For example, storage media may be prepared for storing a variety of programs for the clients 2a, 2b, . . . 2n in the center system 1 to execute the above described steps for processing information and deciding conditions. The storage media may include computer accessible storage 25 media such as a floppy disk and optical disk, among others (corresponding to claims 38 through 49).

[0168]

These storage media may be installed into a floppy disk unit and CD-ROM reader, respectively, in a conventional general purpose processor, to thereby for the programs stored therein be read out and installed further into an internal hard disk unit. As a result, the capability of the image forming apparatus control system 1 as the computer system can be properly carried out.

5 [0169]

Although the system and method are detailed herein above primarily with specific embodiments of remotely controlling image forming apparatuses, it is needless to add that the control system and method incorporating the storage medium may also be adopted to other apparatus and center system such as a keycard control apparatus for managing the number of copy duplication for respective groups, gas meter, electric power meter, vending machine, among others.

10

[0170]

[ADVANTAGES OF THE INVENTION]

It is apparent from the above description including the examples, service activities upon receiving information concerning various apparatuses including image forming apparatuses can be performed with the system and method disclosed herein in an efficient and economical manner, and it becomes feasible to increase the efficiency in the service activity and to reduce undue cost for the activity.

25 [Brief Description of the Drawings]

FIG. 1 is a block diagram illustrating the construction of a control system for the image forming apparatuses according to one embodiment

disclosed herein.

FIG. 2 is a block diagram illustrating the construction of the center system (central control system) 1 of FIG. 1 and service depots.

FIG. 3 is a block diagram illustrating the configuration of the clients
5 2a, 2b, ... 2n of FIG. 2 and a server.

FIG. 4 includes a table illustrating the content of customer information stored in the customer data base DB of FIG. 2.

FIG. 5 is the portion continued from FIG. 4.

FIG. 6 includes a table illustrating the content of customer
10 information stored in the temporal reception DB 59b of FIG. 2.

FIG. 7 is a block diagram illustrating the construction of the communication adapter 11 of FIG. 1.

FIG. 8 is a schematic diagram illustrating the construction of a control system for the image forming apparatuses according to another
15 embodiment disclosed herein.

FIG. 9 is a block diagram illustrating the construction of the communication adapter 96 of FIG. 8.

FIG. 10 includes a flow chart illustrating an information process flow carried out by the clients 2a, 2b, ... 2n according to claims 11 and 26
20 (the first embodiment).

FIG. 11 includes a similar flow chart according to claims 6 and 29 (the second embodiment).

FIG. 12 includes another similar flow chart according to claims 2, 7,
21, 22, 27 and 30 (the third embodiment).

25 FIG. 13 includes a similar flow chart according to claims 16, 23 and 33 (the sixth embodiment).

FIG. 14 includes a similar flow chart according to claims 18, 24 and

35 (the eight embodiment).

FIG. 15 includes a similar flow chart according to claims 19, 25 and 36 (the ninth embodiment).

5 FIG. 16 includes a similar flow chart according to claims 20 and 37 (the tenth embodiment).

FIG. 17 includes a table for the illustration with FIG. 12.

FIG. 18 includes a flow chart illustrating an information process flow by the clients 2a, 2b, ... 2n of FIG. 3 according to claims 11 through 15 and 32 (group setting).

10 FIG. 19 includes another flow chart according to claims 11 through 15 and 32.

FIG. 20 includes still another flow chart according to claims 11 through 15 and 32.

15 FIG. 21 includes another flow chart according to claims 11 through 15 and 32.

FIG. 22 illustrates data formats in data request steps between the center system 1 and terminal units 7a, 7b, ... 7n.

[Description of the Numerals]

20 1 : Center system (central control system)

2a, 2b, ... 2n : Clients

3 : Server

4, 6, 86, 94 : Network

5 : Telephone line public switched telephone network

25 7a, 7b, ... 7n : Terminal units

11, 21, 96 : Communication adapter

12, 22 ,81 ,91 : Facsimile apparatus

13, 23, 84, 93 : Copying machine
15, 85 : Printing machine 15
31, 51 : CPU
32, 52 : Real time clock circuit
5 33, 53 : ROM
34, 54 : RAM
40, 59 : HDD
41, 60 : CRT display
42, 61 : Keyboard
10 87, 95 : Network control system

[Name of Document] Drawings

15

[Name of Document] Abstract of the Disclosure

[Abstract]

[Object of the Invention]

To provide a method utilizing a central control system (center system) capable of increasing the efficiency in the activity of a service engineer in charge and reducing undue cost for the activity when information regarding service requests is received from an apparatus to be controlled on the customer side.

[Means for Solving the Problems]

When information on pre-maintenance is received from an apparatus on the side of the clients controlled by a center system 1 by way of the telephone line public switched telephone network 5 from any of image forming apparatuses, divided into a predetermined number of groups, including a facsimile apparatus 12, copying machine 13 and others, the central control system included in a remote control system is adapted to collect information from all of a plurality of apparatuses included in the same group except the image forming apparatus, from which the information is originally transmitted. Alternatively, the central control system is also adapted to accumulate the information received into a temporal reception DB and to retrieve related information from the DB, based on the kind of the information received, from all of the plurality of apparatuses included in the same group except the image forming apparatus, from which the information is originally transmitted.

[Selected Drawing] FIG. 1

FIG. 1

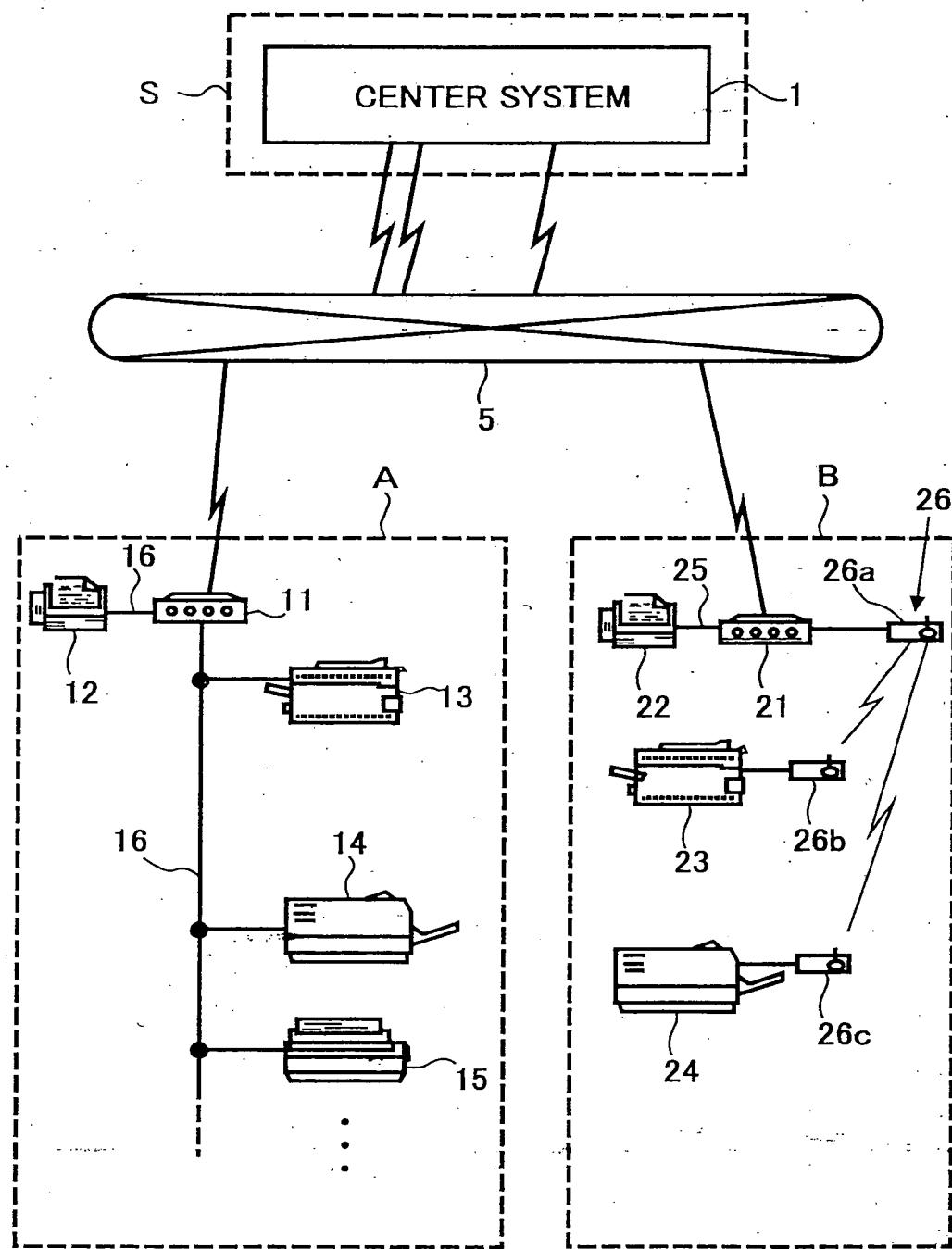


FIG. 2

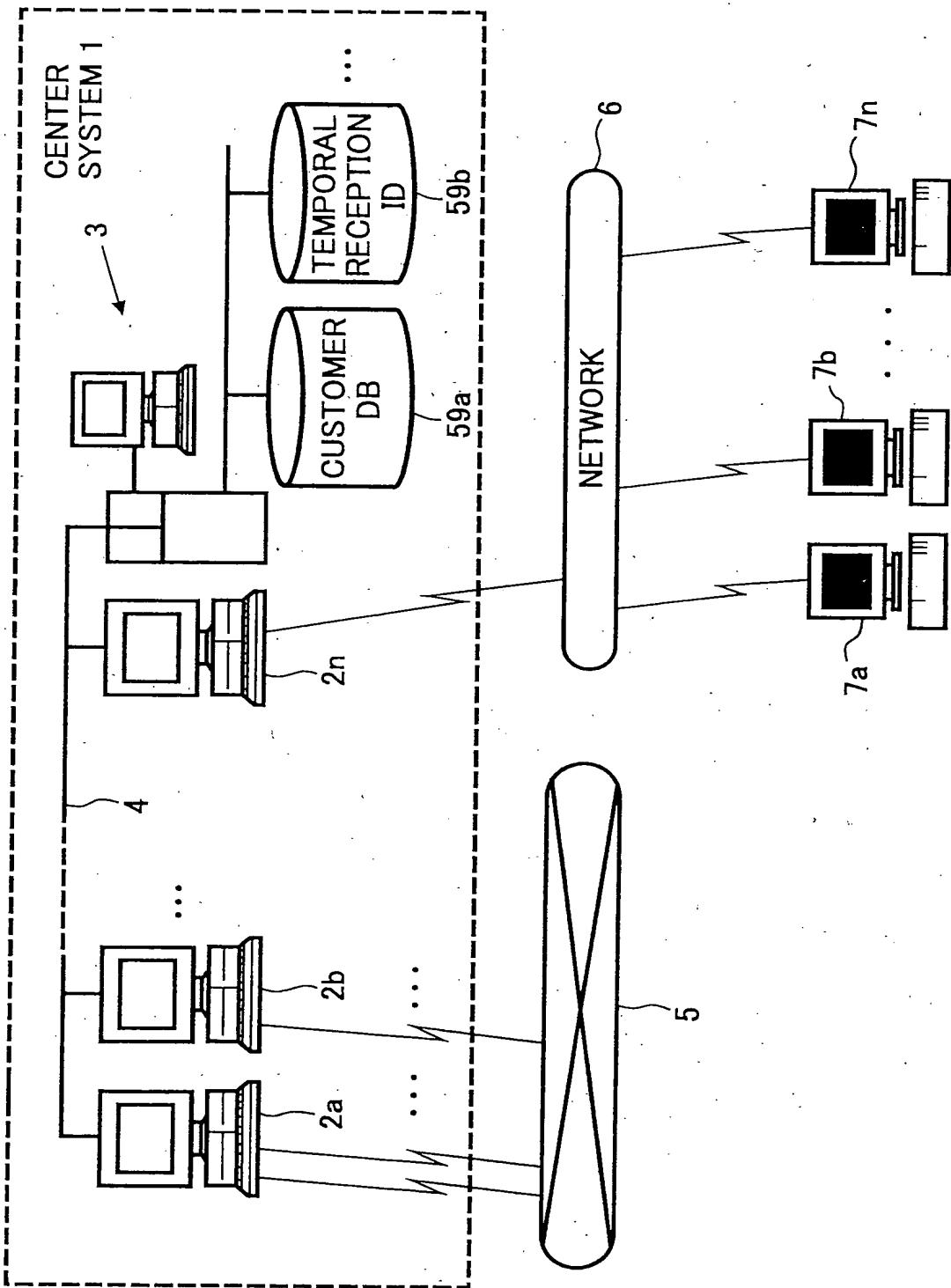


FIG. 3

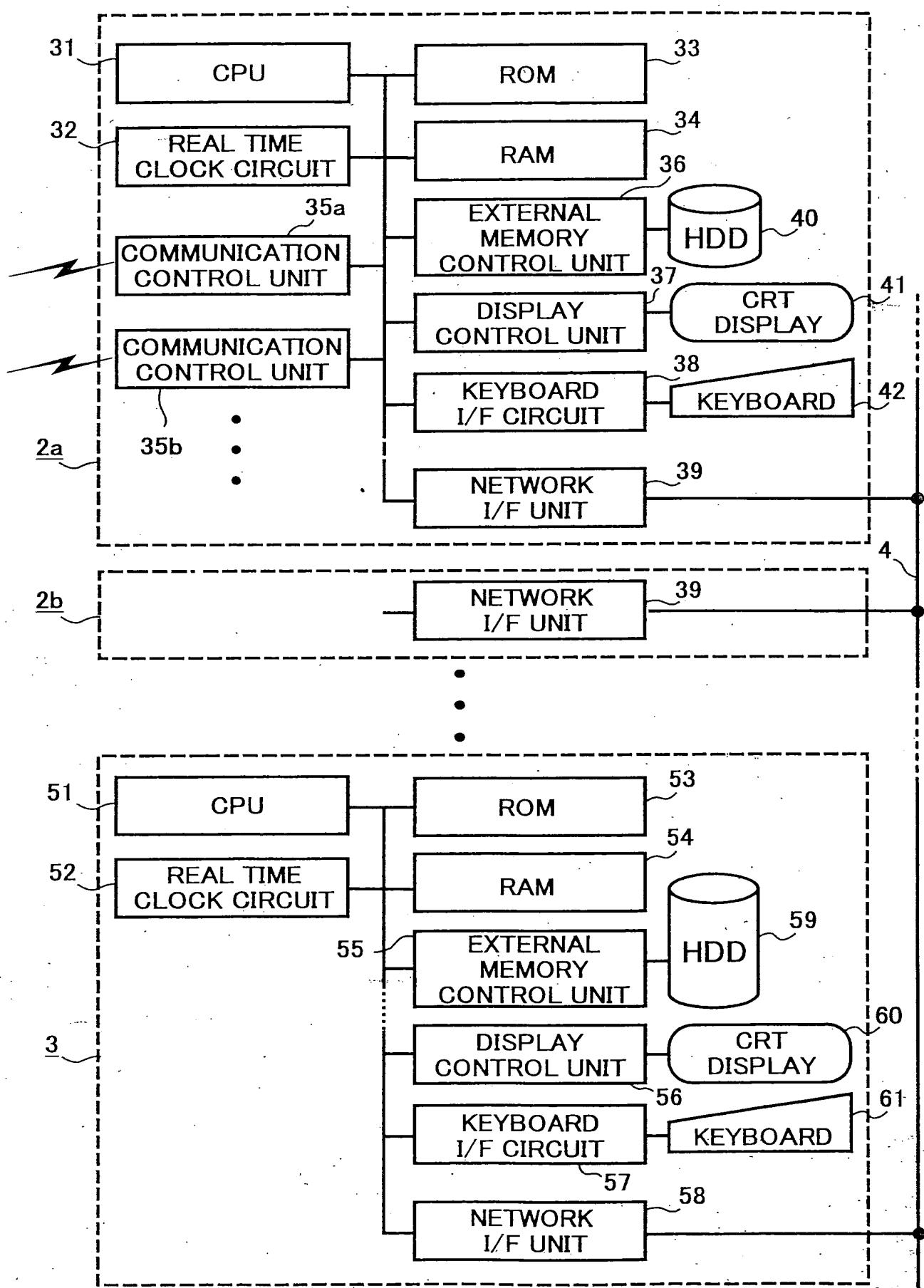


FIG. 4

APPARATUS MODEL NO	CUSTOMER ID	CUSTOMER NAME	ADDRESS	AREA CODE	BUILDING	FLOOR NUMBER
XX...1	XXX5600	SHINYOKOHAMA DIV, XXX CO LTD	3-2-3, SHINYOKOHAMA KOHOKU-KU, YOKOHAMA	XXX123	SHINYOKOHAMA BLD	03
XX...2	XXX2000	XXSHOKAI LTD	XX...X	XXX500	TAKAHASHI BLD	B01
XX...3						
XX...4						
XX...5	XXX1000	XX SHOKAI LTD	3-2-3, SHINYOKOHAMA KOHOKU-KU, YOKOHAMA	XXX123	SHINYOKOHAMA BLD	20
.						
XX...m	XXX5600	SHINYOKOHAMA DIV, XXX CO LTD	3-2-3, SHINYOKOHAMA KOHOKU-KU, YOKOHAMA	XXX123	SHINYOKOHAMA BLD	10

FIG. 5

CUSTOMER/ PERSON IN CHARGE	PHONE NUMBER	COMMUNI- CATION ADAPTER MODEL UNIT, NO	ADAPTER CONNECTION ID	SERVICE AREA		
				SERVICE STATION	ADDRESS PHONE	ENGINEER PERSONNEL
RICOH TARO	12-3456-7890	XXX-1234	12-6543-9876	YOKOHAMA SS	XX-XXXXX	RICOH ICHIRO
	23-4567-8901	XXX-5678	98-7654-3210	ATSUGI SS	XX-XXXXX	RICOH SABURO
RICOH JIRO	12-3456-6789	XXX-9012	12-6544-8901	YOKOHAMA SS	XX-XXXXX	RICOH ICHIRO
RICOH GORO	12-3456-9876	XXX-3211	12-6544-0123	YOKOHAMA SS	XX-XXXXX	RICOH ICHIRO

FIG. 6

TIME RECEIVED (YEAR, MONTH, DAY, HOUR, MINUTE)	APPARATUS MODEL, NO	RECEPTION ID CODE	DETAILED DATA	ACTION TO BE TAKEN, OR NO
00.01.18.08:00	XX...10	80	XXX...X	0
01.18.08:00	XX...02	10	XX...X	0
01.18.08:01	XX...30	30	XX...X	0
01.18.08:05	XX...11	20	XX...X	0
01.18.08:06	XX...01	80	XX...X	1
01.19.17:00	XX...31	80	XX...X	1
.
01.20.08:00	XX...02	80	XX...X	1
.

FIG. 7

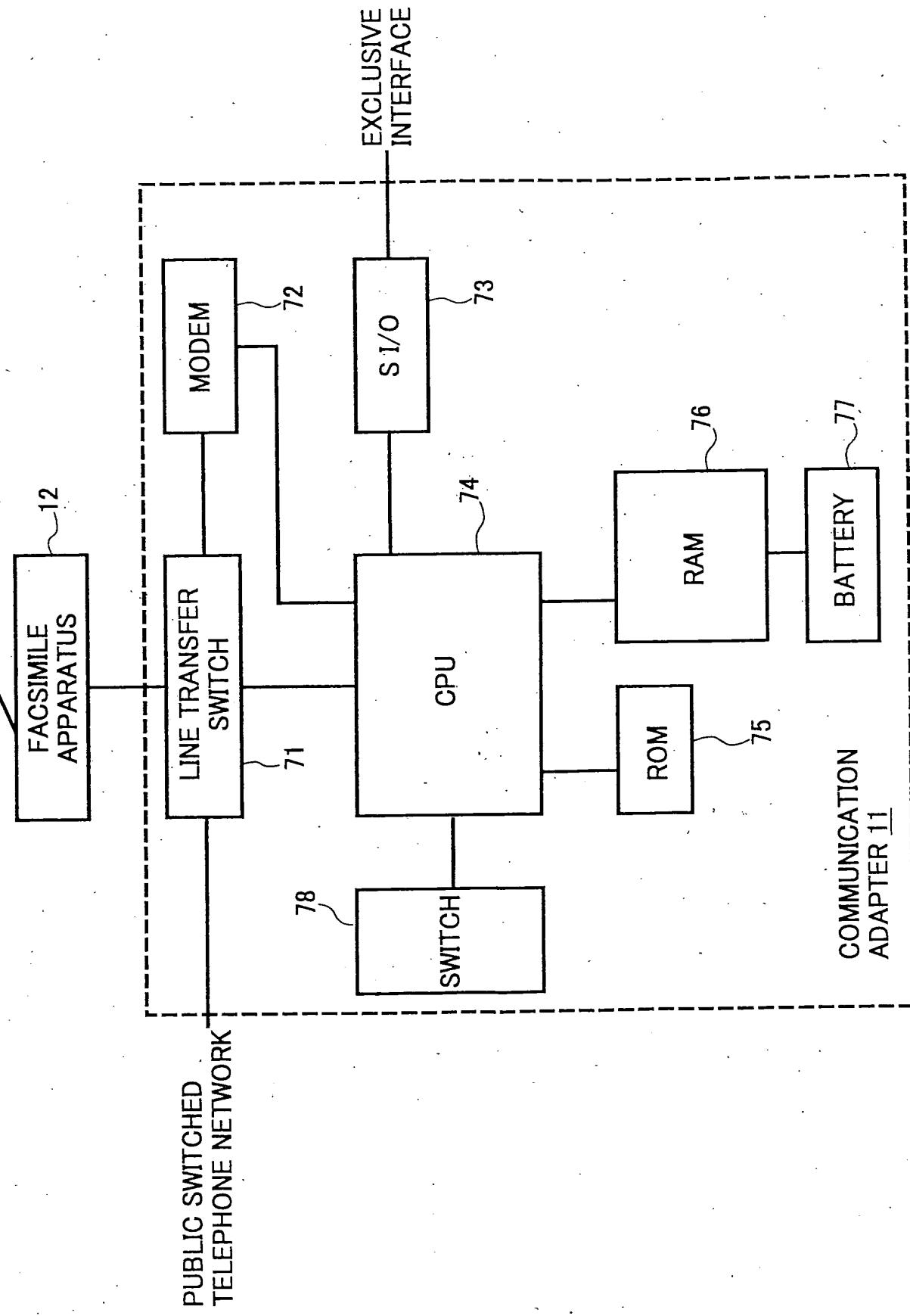


FIG. 8

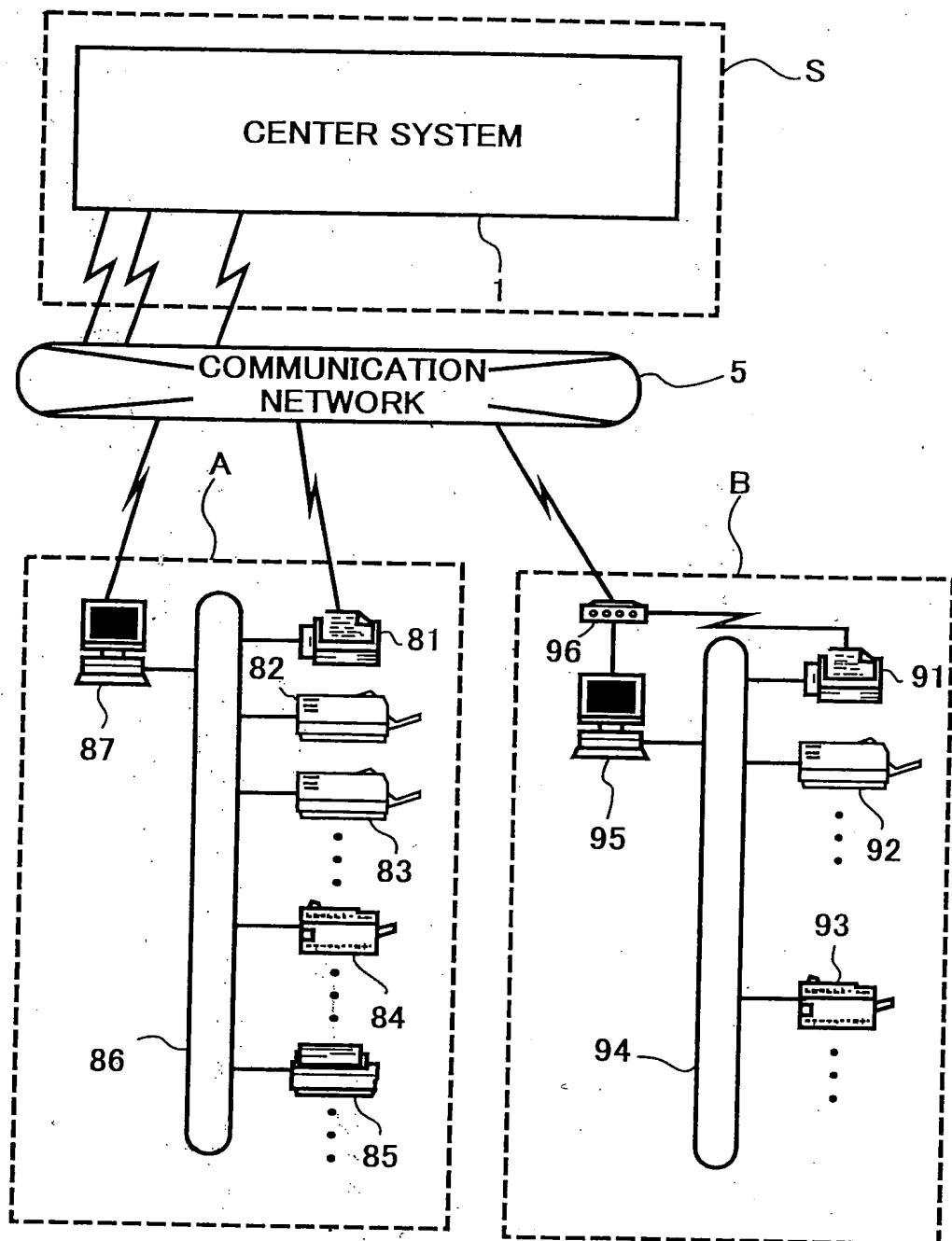


FIG. 9

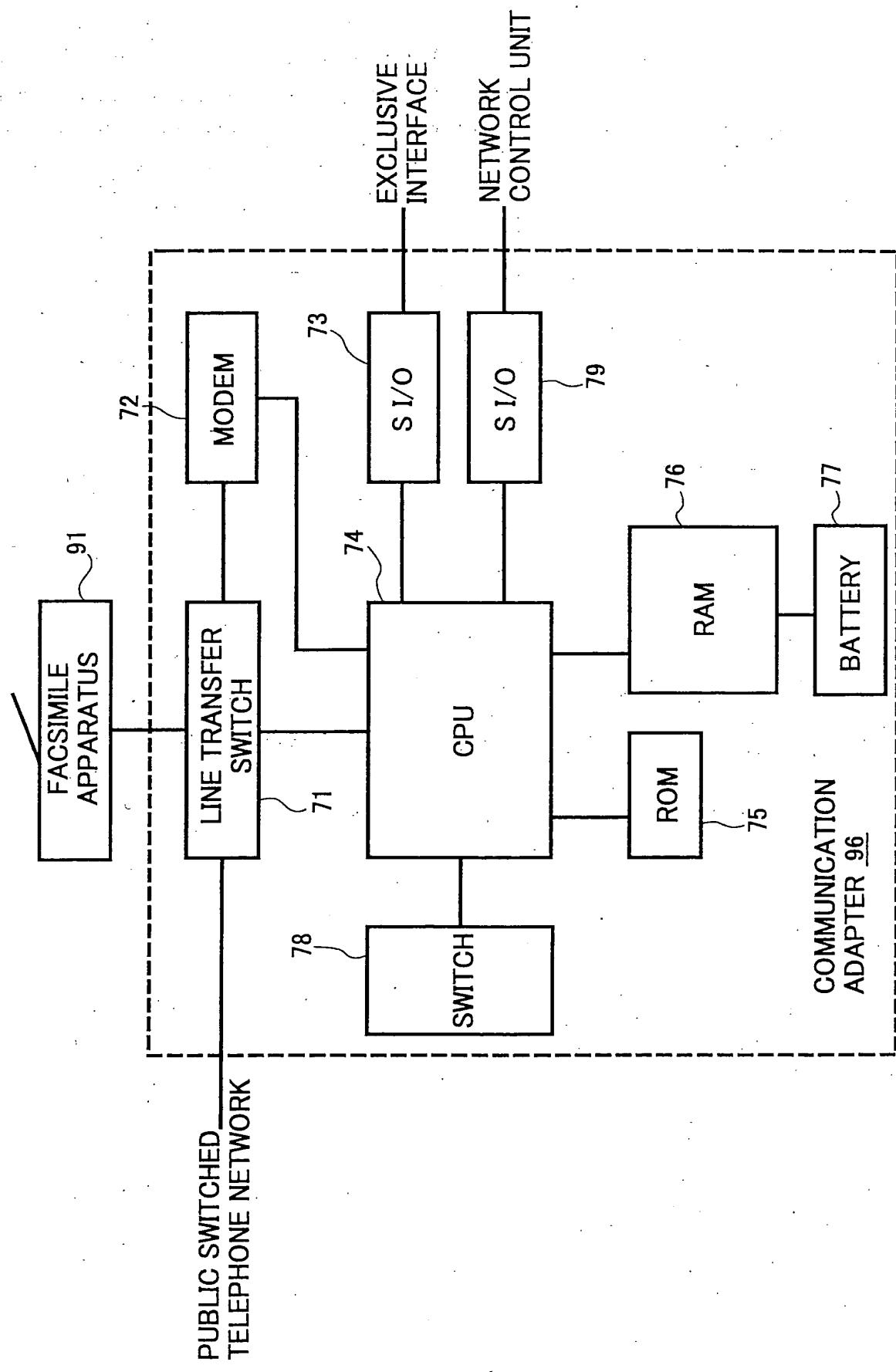


FIG. 10

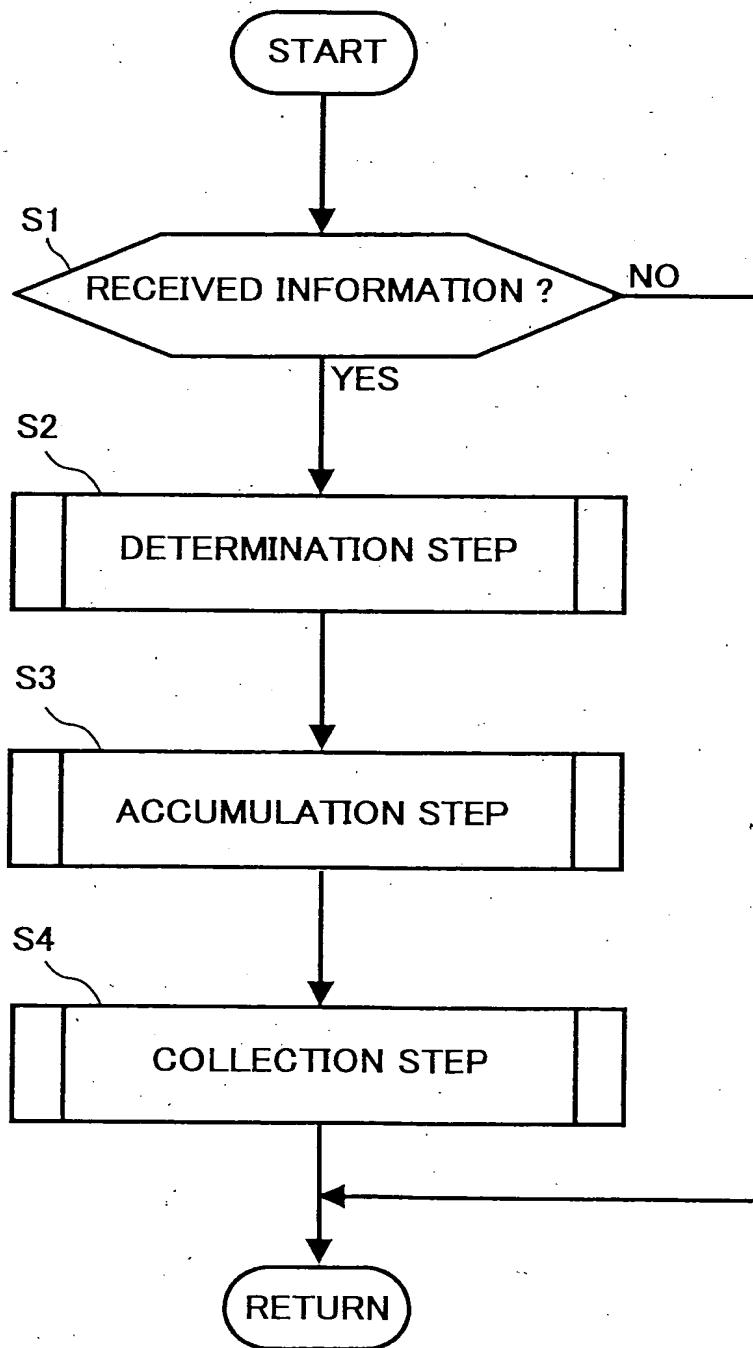


FIG. 11

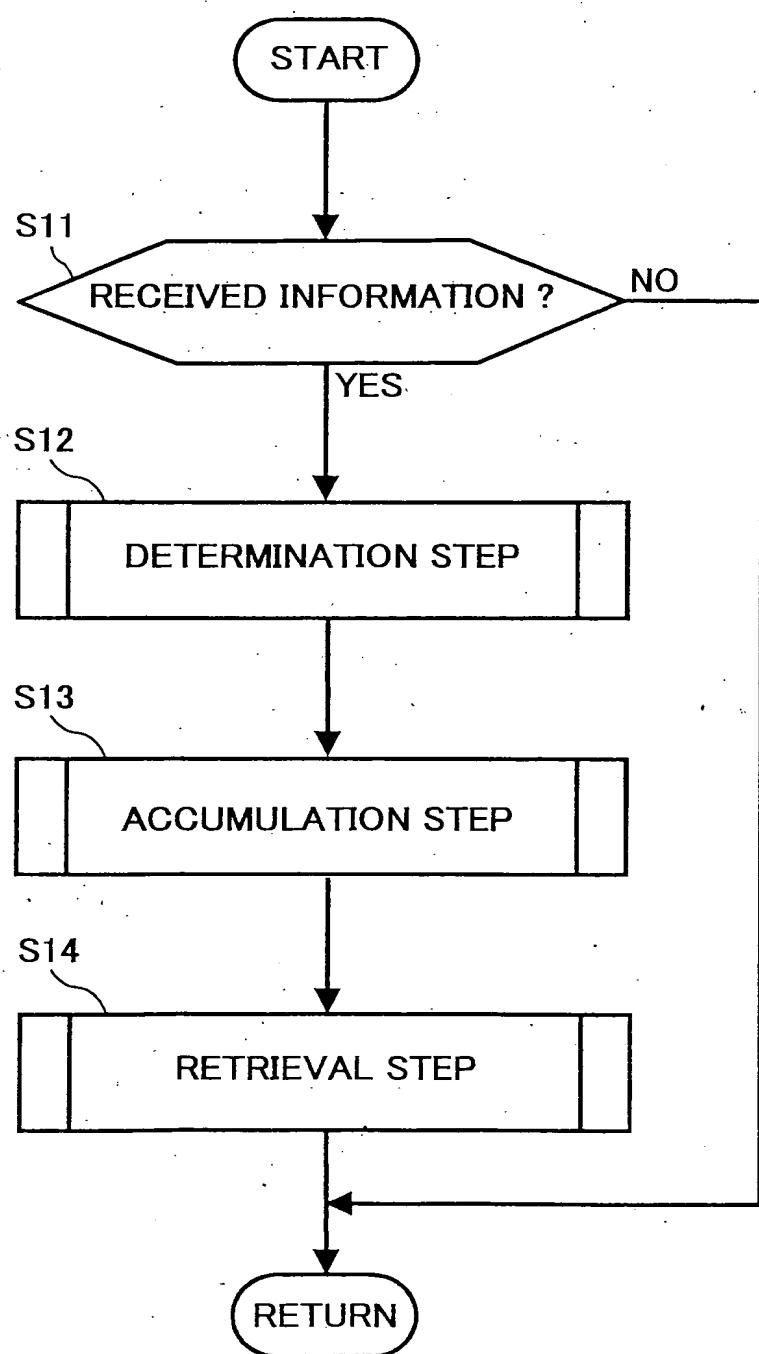


FIG. 12

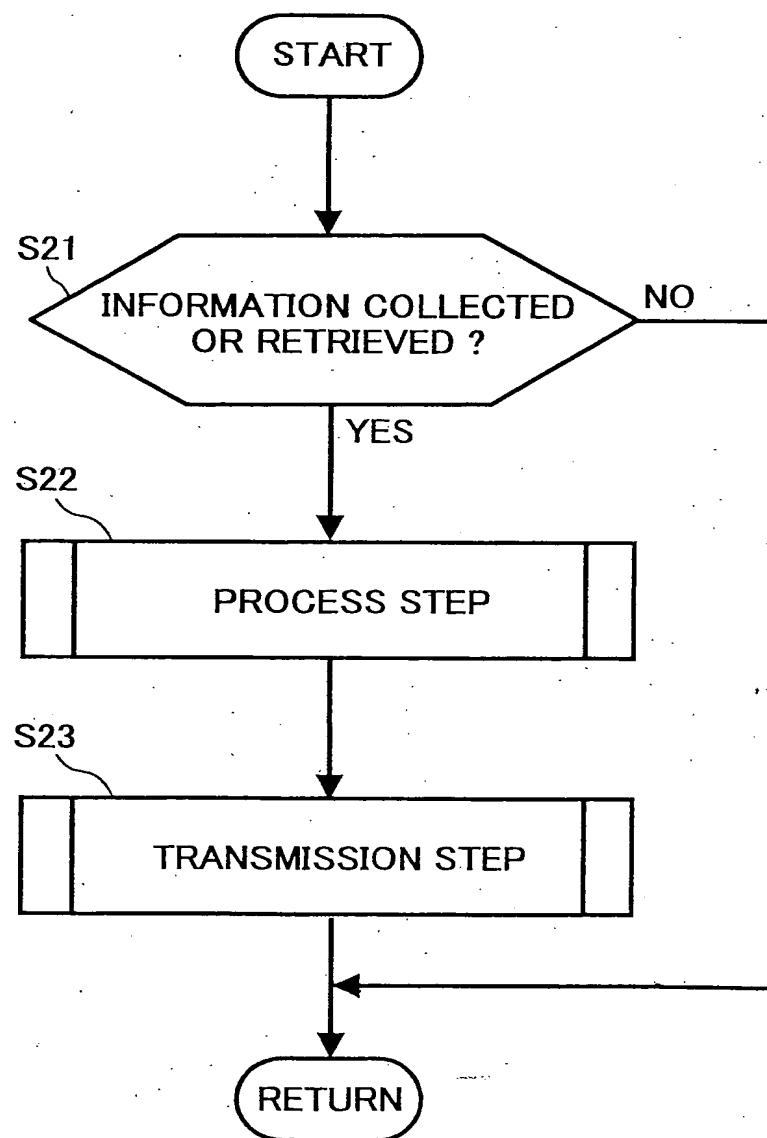


FIG. 13

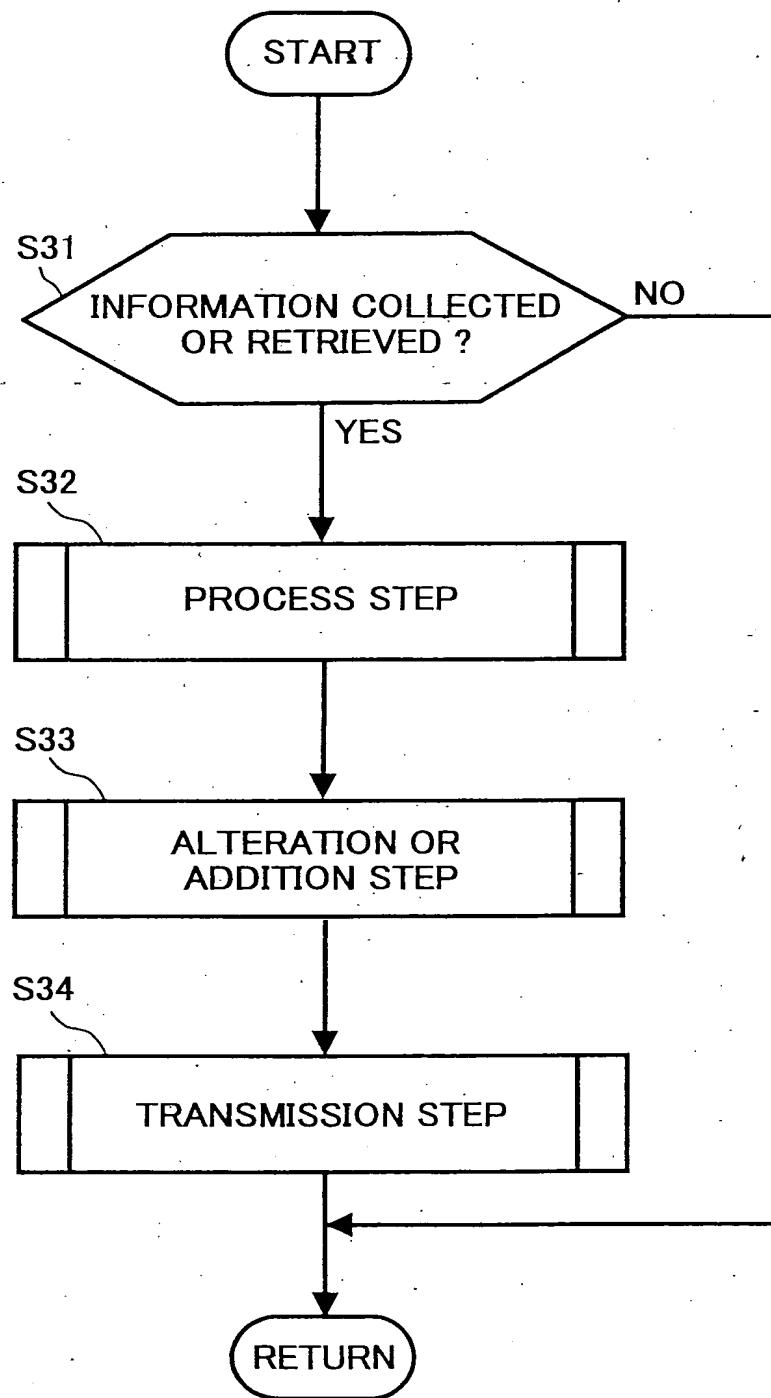


FIG. 14

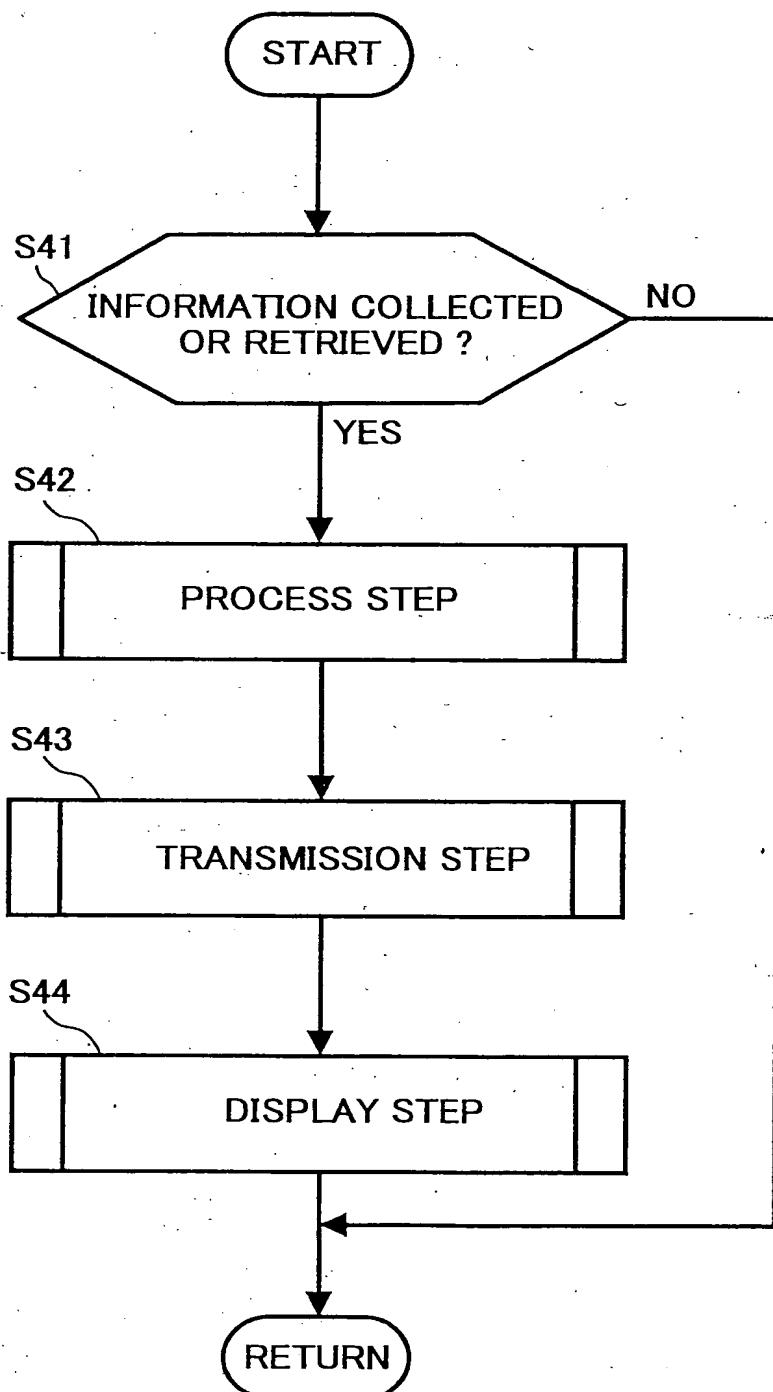


FIG. 15

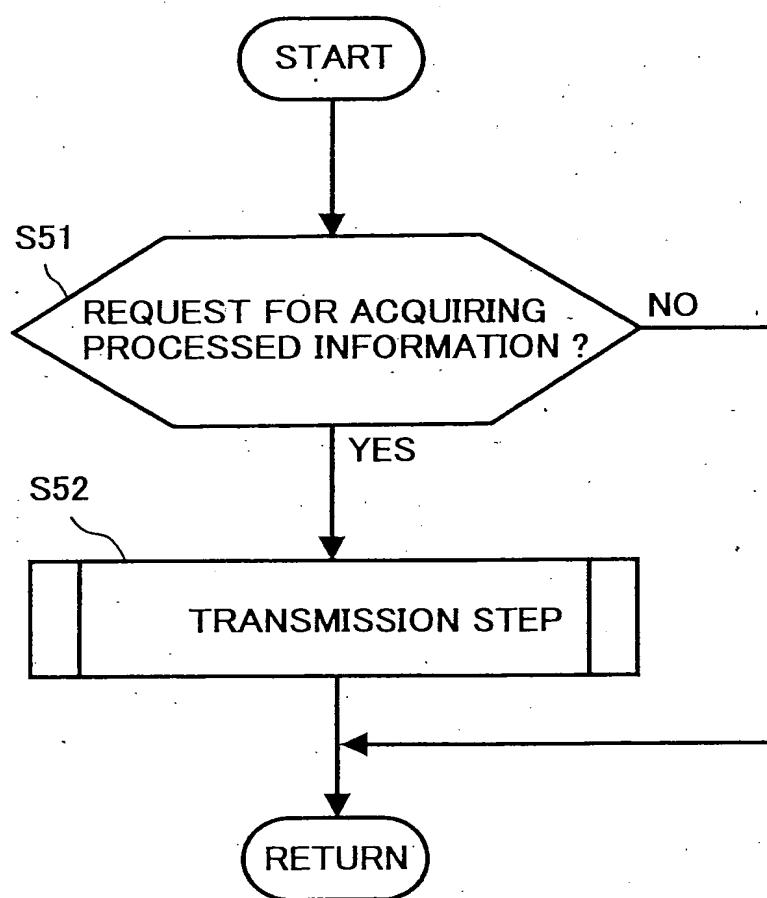


FIG. 16

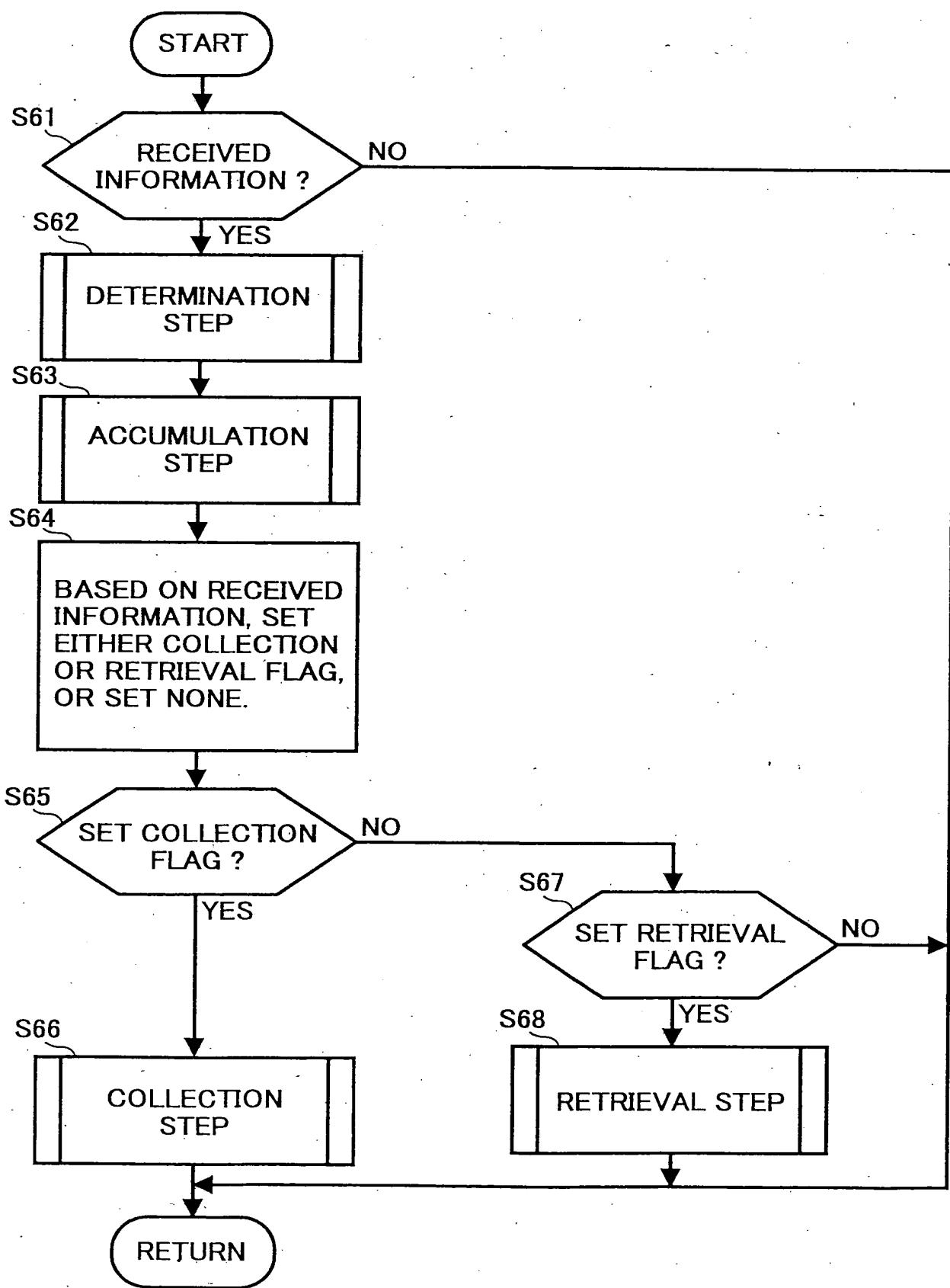


FIG. 17

MODEL, NO	FAULT CODE	'99,1	2	3	4	5	
XX...10	1001	0	0	1	0	0	
	1003	0	0	0	1	0	
	1011	1	1	1	1	1	
	1012	0	0	0	0	1	
							TOTAL
					1	1	2
						2	2

FIG. 18

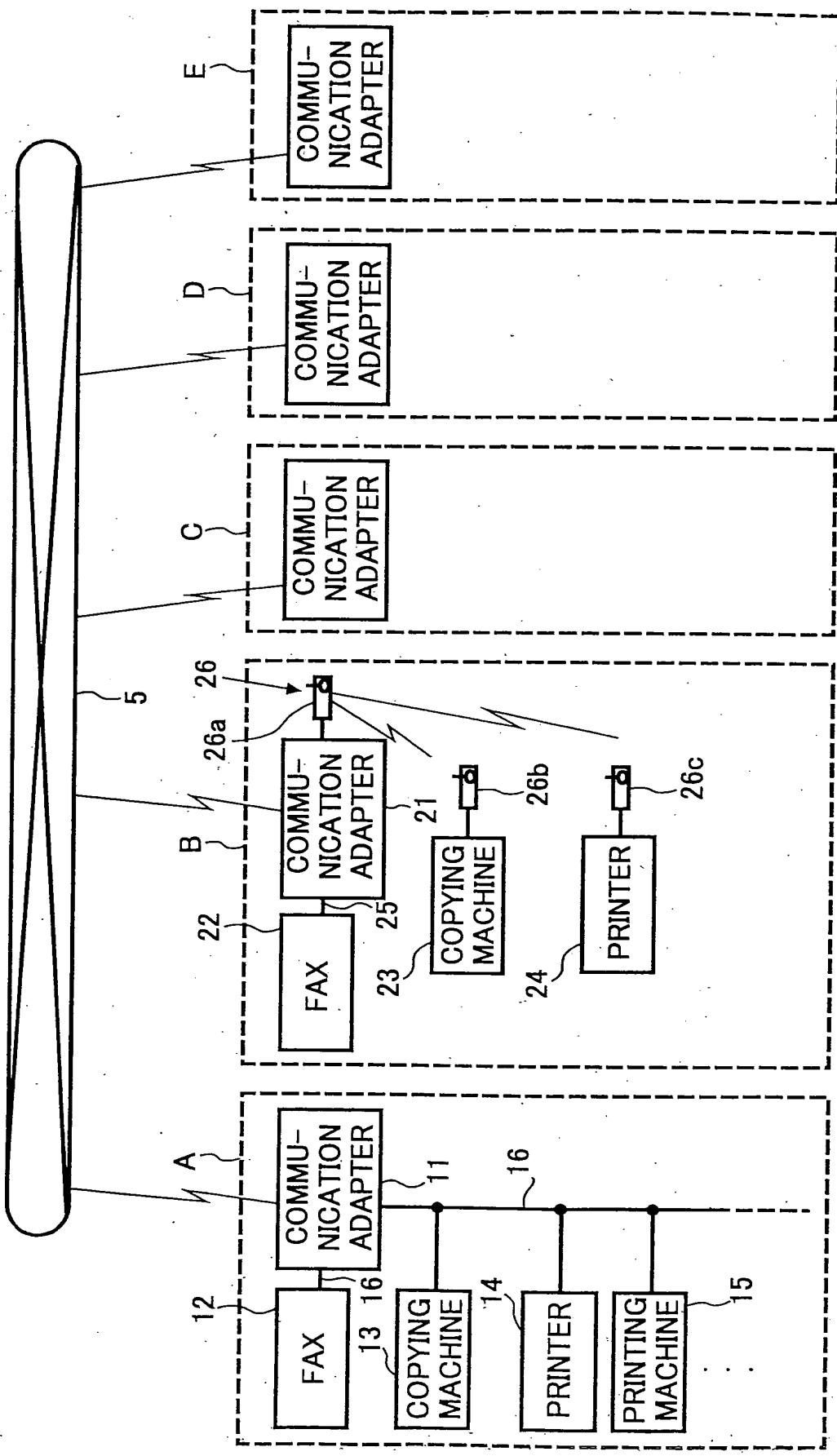


FIG. 19

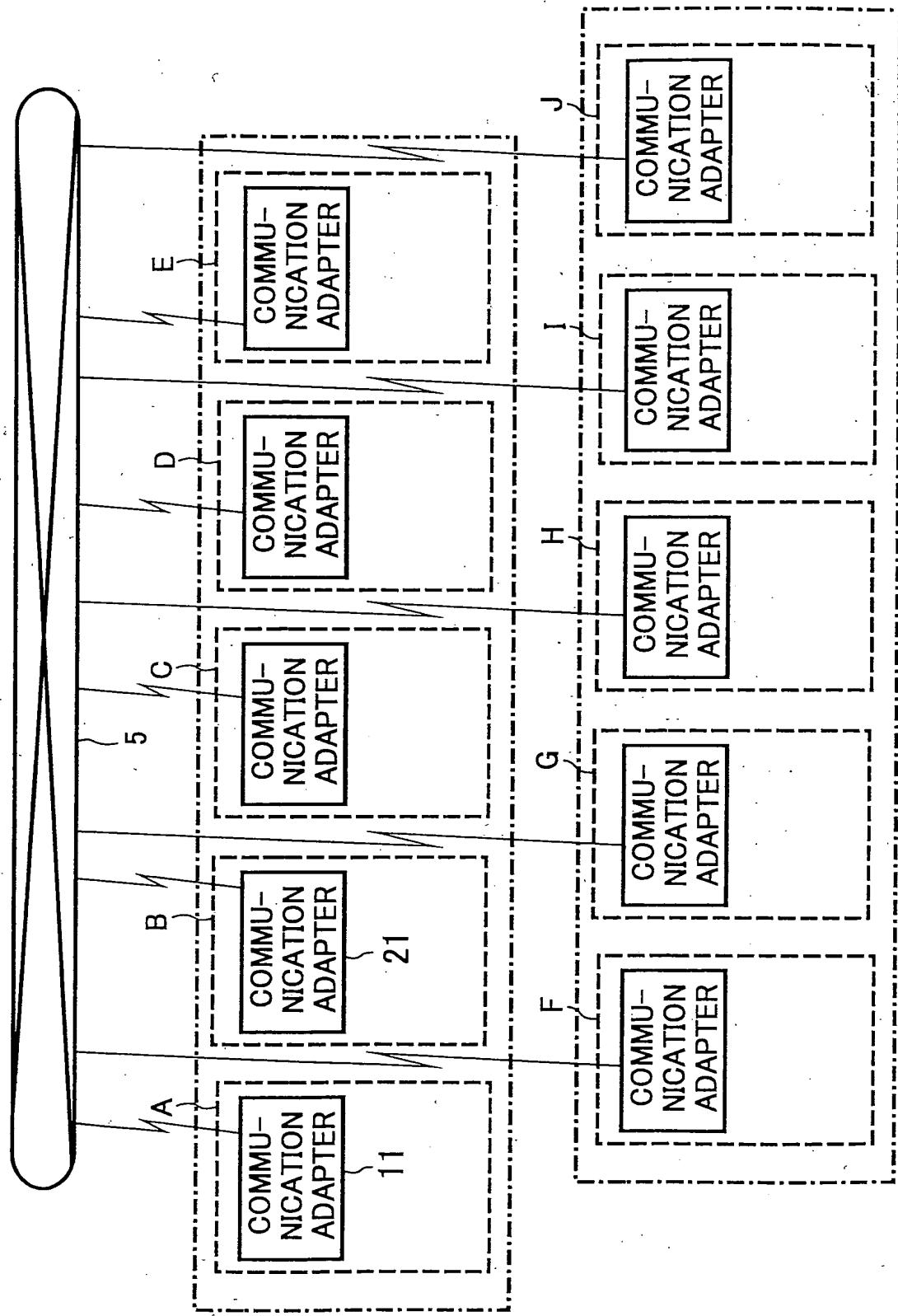


FIG. 20

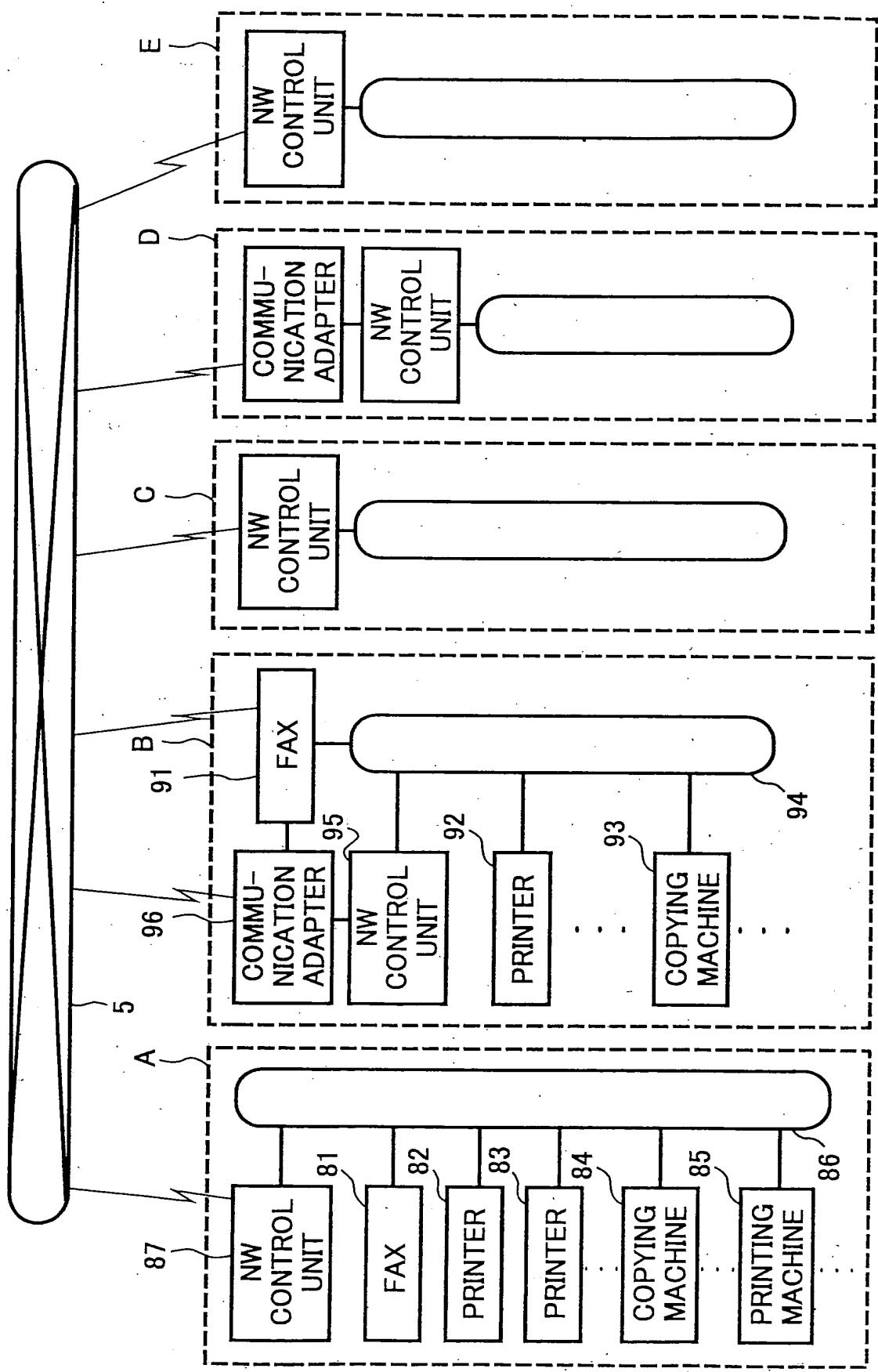


FIG. 21

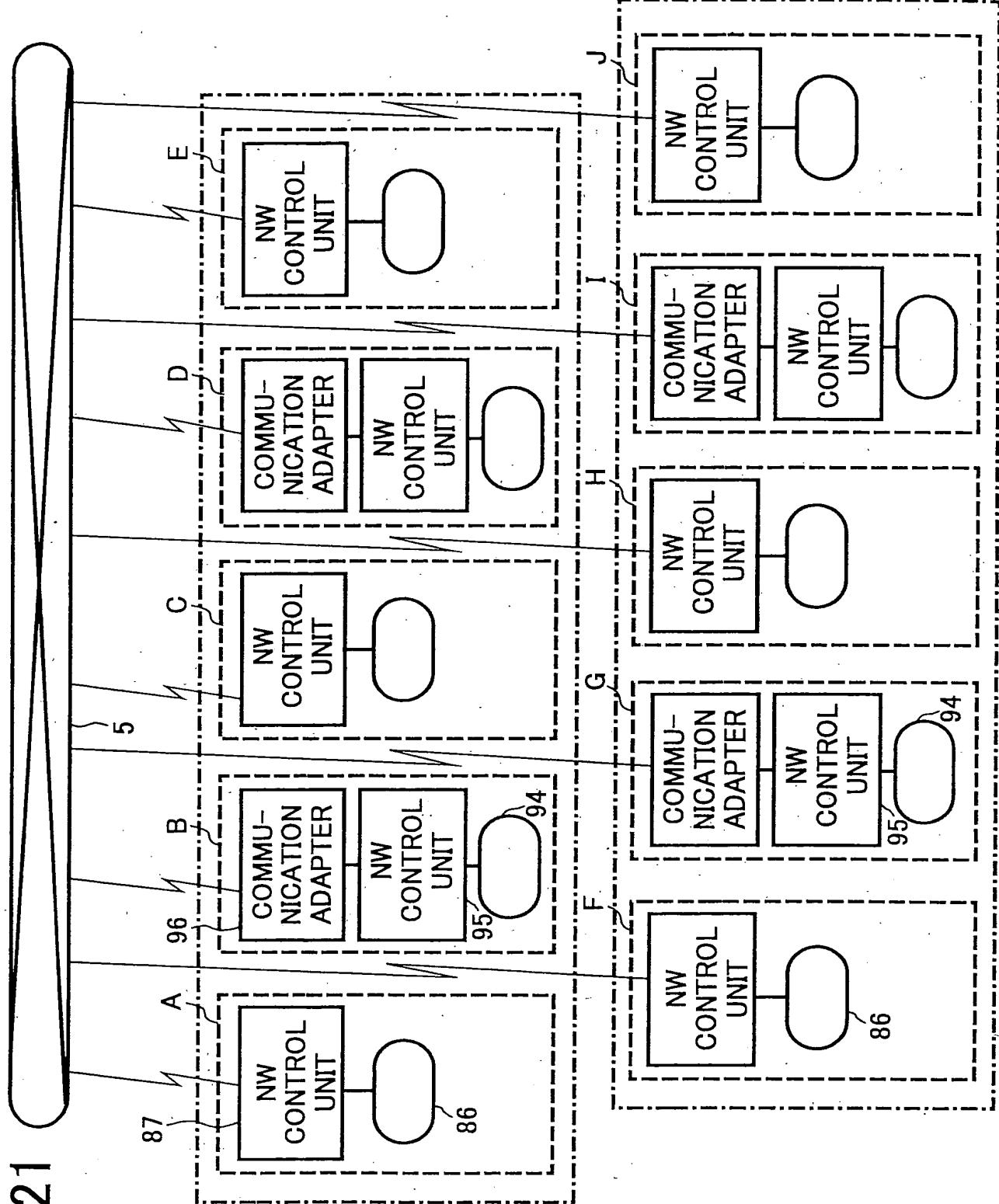
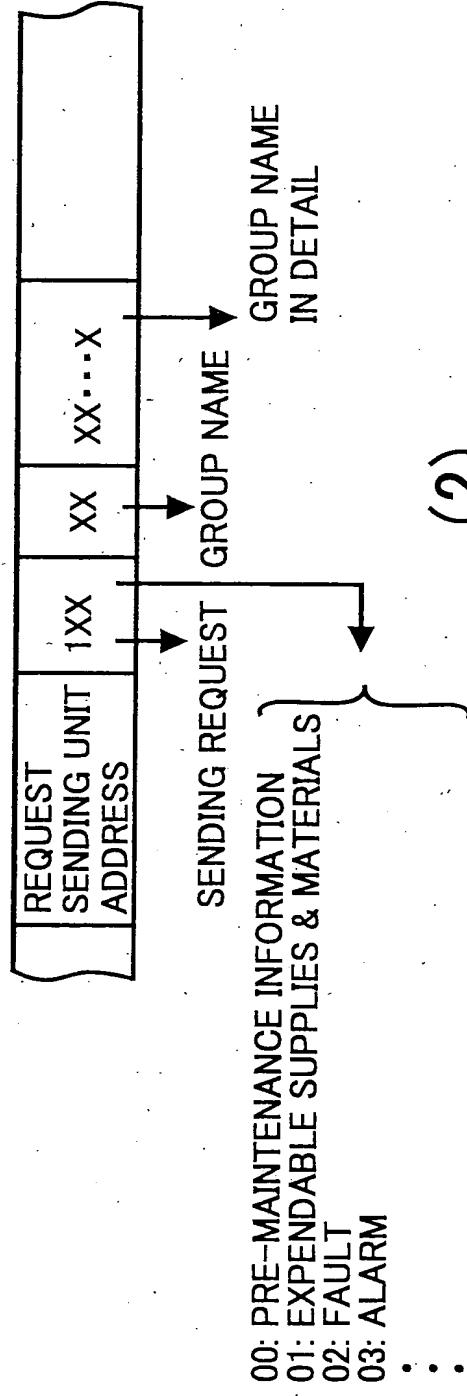


FIG.22

(1)

ILLUSTRATION : DATA REQUEST FORMAT

TERMINAL (OR COMPUTER SYSTEM) → CENTER SYSTEM



(2)

ILLUSTRATION : DATA RESPONSE FORMAT

CENTER SYSTEM → TERMINAL (OR COMPUTER SYSTEM)

